

The New
BRAZIL

Luiz Fernando Levy





This book is a portrait of Brazil. The photographs were inspired by Luiz Fernando Levy, 63, the president of "Gazeta Mercantil", a fatigueless traveler who knows each one of the Country's States and who has spoken personally with thousands of entrepreneurs of his acquaintance. During the past ten years, Luiz Fernando has imbued them with his optimism, his faith and his dreams in some 300 speeches that he delivered from North to South, from East to West. His message was one of building a better country for all Brazilians.

The welcome he received encouraged him to carry on with his mission, even in times of international, Brazilian and sector crises. Luiz Fernando's entrepreneurial spirit, his ability to communicate and his knowledge of Brazil put him on a par with each person he engaged in conversation. His speeches were highly applauded but rarely would you read this in his newspaper due to his modesty and democratic principles that never allowed Luiz Fernando to directly interfere in the news published in "Gazeta Mercantil", out of respect to its readers and its team of professional journalists.

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CANNOT BE SOLD SEPARATELY

Luiz Fernando Levy

The New Brasil

GAZETA MERCANTIL

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The New Brasil

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THE NEW BRAZIL

Summary

9 - Introduction

The ex-minister Eliezer Batista praises "Brazil as it really is, and not a Brazil painted in folkloric terms..."

13 - Preface

Gazeta Mercantil's president describes how he has seen a new country emerge over the last few years.

15 - A Strategic Country

Brazil is the world's fifth largest country in regards to territory but is number one in terms of water, coffee, land potential, etc.

37 - Yes Sir, this is Made in Brazil

Industrialized Brazilian products, from shoes to airplanes, gain market share in all of the five continents.

59 - The managed debts

The financial system underwent a healing process, the international banking community placed their bets and came up trumps, but interest rates are still high.

75 - The logistics of hope

The adventurous Brazilian has a choice of many different paths, however each one has to be analyzed and developed before the country can reach a safe haven.

95 - Visionaries, pioneers and entrepreneurs

The energy matrix is being diversified. Despite all its problems the prospects for energy in Brazil are encouraging.

111 - Clear legislation, clean water

Water is abundant and its use should comply with clear and all-inclusive legislation.

131 - Sunshine and Vineyards

The northeast is aware that its main problem is a lack of water. The region is now facing a new reality.

157 - A country that straddles two hemispheres

The Amazon is the home for sophisticated industries amidst a variety of ecosystems that need to be preserved.

173 - The Brazilian multinationals

An increasing number of Brazilian companies are developing successful industrial plants and services in all the five continents.

189 - A society molded from a wide variety of people

Brazilians are forming a multiracial society from the descendants of white, black, yellow and indigenous people.

207 - Health leaves the intensive care unit

Brazil is healthier. The achievements of the past decade have removed the patient from the intensive care unit.

225 - A great Social Melting Pot

Three of the four main candidates in the last presidential elections come from emerging social groups.

239 - The emergence of the Brazilian woman

The Brazilian woman has always been a warrior. The women's revolution encouraged them to conquer new places in society.

251 - Technological progress

Science and technology walk hand-in-hand towards a modern world based on structured policies.

269 - The fourth generation of consumption

Considered an archipelago of Provinces in the middle of the 20th century Brazil is still an underprivileged market, but it is on the rise.

285 - Statements about Brazil

Several distinguished foreigners have given their opinions about Brazil starting with Pero Vaz de Caminha right up to the present day.

289 - Sources and references

299 - Iconography

Presentation

Eliezer Batista (*)

The reader will discover, in the forthcoming pages, a summary comprised of precise information about Brazil at the beginning of this new millennium. It can be assimilated as a detailed technical X-ray of the country and is founded on meticulous research work

Praise should also be directed to the excellent work carried out in the editing department that is akin to the high level of quality encountered in the relentless search for information.

This Brazilian nation, that our bodies and souls are proud to be a part of, is portrayed in a way that is absolutely honest and straightforward. It describes who we are as a people, takes into account our triumphs and weaknesses, and explains this in a text that, above all, describes the amazing transformations that have taken place in recent years.

We have, as the text also points out, a long road to travel before we can say that we have completed the cycle of bringing this transformation in line with other countries. At the same time, we are still lacking the ability to assume the role of a forerunner during these times of vertiginous globalization

This praiseworthy Encyclopedia of Brazil, honed from the best of our journalistic talents, combines something that is not easily come upon, in other words, a presentation of in-depth journalism together with the lighter side of reporting issues. The book offers an opportunity for business investors, analysts, journalists, and other interested parties to catalyze their own fundamental and systematic opinions about the Brazil that we are now living in. This book is a precious source of reliable information that should serve as a starting point for making up one's own mind in regards to the country that really exists and not just the Brazil that is painted in folkloric terms and, at the same time, is greatly misconstrued.

Rio de Janeiro, 24th of October 2002.

(*) International consultant, ex-minister for Mines and Energy, ex-president of Cia. Vale do Rio Doce S/A.

Prologue

During the last decade, and more intensely since 1996, I have traveled throughout this country of ours in a way that few people can lay claim to. I spoke at more than 300 seminars and debates for the widest of publics and in the most diverse corners of the land. My mission was to strengthen Gazeta Mercantil's identity as a nation-wide newspaper and, above all, to acquaint myself with this new Brazil that was beginning to blossom.

We tempered our experiences with information about investment decisions, their locations, the period needed for maturity and the origin of the resources. The Information Center at Gazeta Mercantil was given the task of accompanying this work together with the Federal Government's initiative denominated "Avança Brasil" (Brazil on the Move). Each foray surprised us with new discoveries, and new realities were constantly being assimilated. Slowly we came to realize that we were witnessing an extraordinary "boom" in investments in our own country. They were analyzed, one by one, and we found ourselves face to face with local and foreign business initiatives, apart from public investment in infrastructure being carried out with funding from the private sector and, in some states, from resources garnered through the privatization process.

We quickly came to appreciate the extent of this structural revolution throughout the country and made a point of turning it public supported by the data gathered by the CI, (Information Center), and from the visits carried out in the field: we did not find ourselves

contemplating occasional spurts of regional development but a real and profound structural change throughout the whole of the country with reverberations on Brazil's geo-economy.

Important regions were starting to change their micro-economies and redefine their roles in the new Brazil that was emerging from this process. States that were predominantly agricultural such as Parana, Goias, Minas Gerais and Bahia were gradually developing modern centers of industry and agricultural business. Ceara, Matto Grosso, Tocantins, and Para, amongst others, were expanding their agricultural frontiers; the city of Sao Paulo was cutting the umbilical cord that bound it to the dominance of industry and was re-designing its manufacturing complex by relocating its industries to the interior of the State. Rio de Janeiro was slowly recovering a healthy rate of large investments that would return the city to the top of the list in terms of development, together with the new regional blueprints that are being drawn up.

The flux of migrants to the large urban centers has slowed down with these new opportunities putting a new face on development in Brazil at a rhythm that few people are noticing or, much less, comprehending.

The media does not accurately describe the speed and scope of the changes and, until this day, there is a great deal of misinformation about the country's structure. The changes have been suffocated by the various, and never-ending, sector crises that dominate both time and space in our media and lead to an incredible amount of ignorance in regards to the dimension of the changes that are taking place.

It has to be recognized that, as a result of these changes, some chronic problems have come to the fore, new social and political demands have occurred and few people are capable of explaining the fundamental changes arising from the fantastic and very welcome growth in the female work force in all sectors. At the same time, we were able to witness the recuperation of old structures and the creation of new ones in vital areas such as ports, waterways, railroads, and a number of highways, however they exist side by side with a lamentable lack of maintenance in regards to the remaining facilities

This far-reaching scenario prompted the idea to pass on this

information by way of a book, not merely in a factual sense providing, whenever possible, a quantitative analysis of the magnitude of the investments but also with both a retrospective and modern appraisal of Brazil's reality today and encompassing the entrepreneurial spirit of local and foreign capital investment. By doing so we hope to portray an extensive panorama of what our country represents at this point in its history.

This analysis, carried out by some of the most experienced journalists on the *Gazeta Mercantil* team, resulted in an important tool for people to acquire knowledge and understanding, both here and abroad, about this country of ours that has to be described as a giant on the move and rapidly making its presence felt on a global scale.

The technology used in the recent elections, the political maturity that can be seen on all sides, the incredible demands for social reforms needed to rescue 22 to 25 million people from poverty, the new regional realities and their effects, all clearly demonstrate the immense progress taking place and the new challenges that face this growing society.

The challenge of portraying these realities to the largest number of people possible is what led us to prepare this book and the revelations contained herein. It represents our commitment to knowledge and informed discussion regarding the country's new paradigm. It is also meant to challenge the optimists and the skeptics, or, why not, the pessimists as well, in an attempt to improve their understanding and increase the consciousness of the society at large that inevitably is responsible - in any democratic system - for progress and the relentless search for a more just society.

Sao Paulo, 6th of November 2002.

Luiz Fernando Levy



A Strategic Country

The statue of the Knight of Hope, dedicated to communist leader Luiz Carlos Prestes who, in the twenties, commanded a guerilla group throughout the arid inland regions of Brazil in an eight thousand-kilometer march, was erected in front of the Araguaia Palace, in Palmas, the capital city of the State of Tocantins, and is emblematic as a symbol of the adventure of a nation that, in search of its identity, was forged by the coming together of people from different groups and different races: Brazilian natives, white Europeans, black Africans, and yellow Asians, came together and this can be seen in the mixture of two or, sometimes, all of these races. This crossbreeding has been taking place over the last five centuries although scenes reminiscent of the abduction of the Sabine women or anything similar to the acts promulgated by the bold Romans of olden times have never, in fact, been recorded. Brazil managed, over the years, to create a unique and peaceful society if compared to other countries in both the old and the new world.

Racial problems are not an issue in this country where friendly intermingling has moved in another direction: it is possible to see a relationship between

several different eras at the same time and in the same place. The young entrepreneur sailing at night in the river Madeira, deep in the Amazon, using a GPS system to set his course, whilst escorting a huge cargo of soybean destined to overseas markets passes just a hundred meters away from a native Brazilian who has recently emerged from the Stone Age and, a hundred meters further on, from someone whose mind is still haunted by beliefs and ghosts from the Middle Ages. All of the people involved have a bird's-eye view of a globalized world thanks to the media of television, 88% of Brazilian homes in a country with a population of 170 million are connected to television sets. The symbol of an activist such as Prestes, whose monument was raised by a politician generally considered to be a conservative, governor Siqueira Campos, can be seen in the success of the telephone system from 1994 through 2002 the number of mobile phones operating in Brazil increased from 775 thousand to 37 million units, whilst the number of land lines grew from 13 million to 45 million.

Brazil is experiencing a vertiginous process of changes that, unfortunately, goes unnoticed in the local and international media. The facts occur at the roots of society all over the country, from the extreme North to the Deep South, and from the Atlantic Ocean to the Far West. In other words, all over the country's 8,547,403.5 square kilometers of territory and encompassing all of its different forms of climates, from the equatorial to the tropical, tropical highlands, Atlantic rain forests, sub-tropical and semi-arid regions. The contrast between the new revolutionary reality that is trying to find its place in the modern world and its place in the routine of daily events can, at times, be construed as cruel and, almost all the time, as demanding. This is the key for understanding the strategic position of the fifth largest country in the world, one that detains the world's largest reserves of available fresh water and innumerable opportunities reaching far beyond the limits of its borders. At the same time signs of human progress are converging towards a new and fascinating scenario. In 2002, some 35 million children were



The rivers of the Amazon region are used for transporting grains from the Midwest where the New Agricultural Frontiers are located.



Coffee was Brazil's main export during the 19th and 20th centuries. Other crops have taken its place.

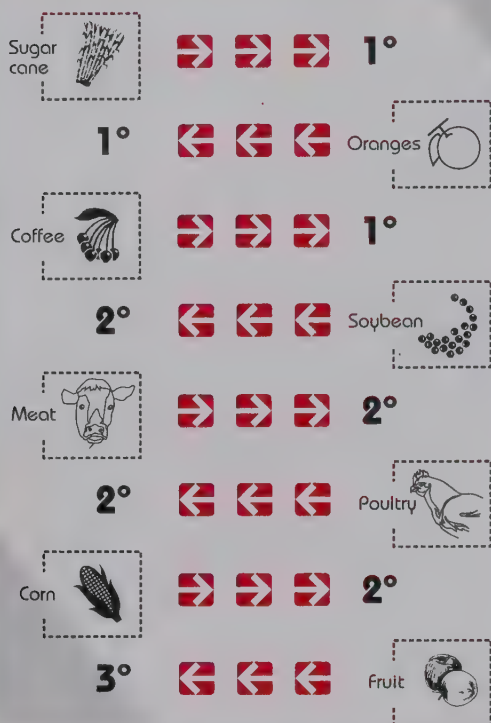
enrolled in elementary school and 8.3 million youngsters are at junior or senior high-school level. The rate of illiteracy has dropped from 17% to 9% over the past eight years.

This new Brazil can boast investment programs in the order of \$547 billion until the year 2005, 30.29% of which will be provided by Brazilian capital, 25.70% by foreign capital, and 20.62% will come from State funding. These investment programs should cause a remarkable economical revolution in regards to jobs, in the volume of production, and compatibility of regional and social disparities. Thus, the New Brazil is a geopolitical, geophysical and geo-economical fact of life, totally different from the stereotypes of a country that is basically known for its coffee, beautiful dusky women, samba, and football. The largest investments are coming from the United States, Germany, Japan, Switzerland, Holland, France, the United Kingdom, and Italy, although Spain and Portugal, (Brazil was a Portuguese colony for centuries), have also invested heavily.

In 1500, the Portuguese were the people who took possession of the land demarcated by Pope Borgia (Borja in Spanish-he was originally from Spain, and used the name of Alexander VI during his turbulent reign as pontif). These early adventurers arrived to exploit a particularly sought after type of tree called pau brasil, which was used for dyes and became a source of wealth. While the Spanish were busy mining gold and silver in Mexico, and later in Peru, the Portuguese and their expatriates marched towards the West and took possession of huge tracts of land where, as early as in the 17th century, one of the pioneers had a vision of Paradise on Earth. This was Pedro de Taques Henequim, a bastard child of the Dutch consul in Lisbon with a maid of Lusitanian background, educated by Jesuits who sent him to Brazil so he would not be "contaminated" by Protestantism. Amongst other deeds, that were later to be considered heretical, the visionary Henequim declared that he had located the Garden of Eden in the middle of Brazil. After being led through the streets of Lisbon as part of his trial and inquisition he was executed before the Royal family. Henequim was

Brazil's ranking in world production

D. DEFANTI



"reduced to ashes" on the 21st of June 1744, condemned by the Inquisition.

During the following centuries, the so called "Garden of Eden" was trampled upon in a number of ways whilst the Portuguese were busy turning Brazil into the world's largest supplier of sugar, produced in coastal regions, and extracting from their future colony whatever they could find: gold, precious gems, and wood for their vessels and furniture. They even managed to obtain an official edict to transfer blood from their children into the offspring born from indigenous and black women. The Marquis of Pombal, a statesman in the 18th century, recommended that this would be the way for the colonizers to populate the New World since there were not enough people to protect the lands conquered from the ambitions of other invaders, especially the French and Dutch. Progress in this paradise started gradually in the 19th century when Brazil became the world's largest coffee producer, and continued until, at the beginning of the 21st century, it could be considered a new frontier. A frontier that was already partially dominated but still had a lot to be conquered. This huge expanse of still

undeveloped land brings us to the conclusion that, in a matter of decades, Brazil will truly become the "provider of the world". It is a country that does not lack either land or water.

In the course of just over two decades, from 1980 through 2002, Brazilian grain crops almost doubled from 50.8 million tons/year, to 100 million tons. During this same period, there was a 70% growth in farming productivity resulting from specialization implemented by the companies working in this sector. It can also be attributed to the migration of a part of the production in the South of the country to the outback of the Midwest and Northern territories. In Mato Grosso, Goiás and Mato Grosso do Sul, the enormous tracts of flat land facilitate the efficient use of machinery and makes production on a large scale easier. Businesses are promising, both for manufacturers of inputs and fertilizers and for industries producing defensive products for agriculture. Although jeopardized by the changes in the exchange rates, the revenues arising from agribusiness amount to around \$100 billion/year. Exports, that achieved revenues of \$14.7 billion in 2001 indicate revenues of more than \$23 billion in 2002. Food production grew by 5% in 2001 with the acquisition of new overseas markets such as the Russian Federation and Eastern Europe. The potential is huge when considering a global market of around \$300 billion a year and the present Brazilian share of this market being a mere 3% of this amount.

The "Brazil risk", as viewed by the ranking agencies, is a misconception that no investor, as conservative as he/she may be, should take for granted. Nigeria, for example, that has been ranked similarly to Brazil, can be compared to the state of Rio Grande do Sul which is just one of Brazil's 27 states. Let us consider the following statistics: the Nigerian GDP is about \$50 billion (year 2000), with an annual per-capita income of \$440.00. In the same year, Rio Grande do Sul had a 46 billion-dollar GDP and a per-capita income of \$4,520.04. Nigeria covers an area of 923,768 square kilometers and is the country with the largest population in Africa-

115 million people-35% of whom are illiterate. Rio Grande do Sul has a population of 10 million in an area of 282,062 square kilometers and its rate of illiteracy is 6.8%. Hence, one can conclude that the "Brazil risk" is built on misconceptions that are produced overseas and are based on unfounded assessments that have been gathered by these rating analysts.

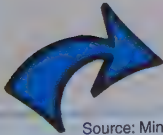
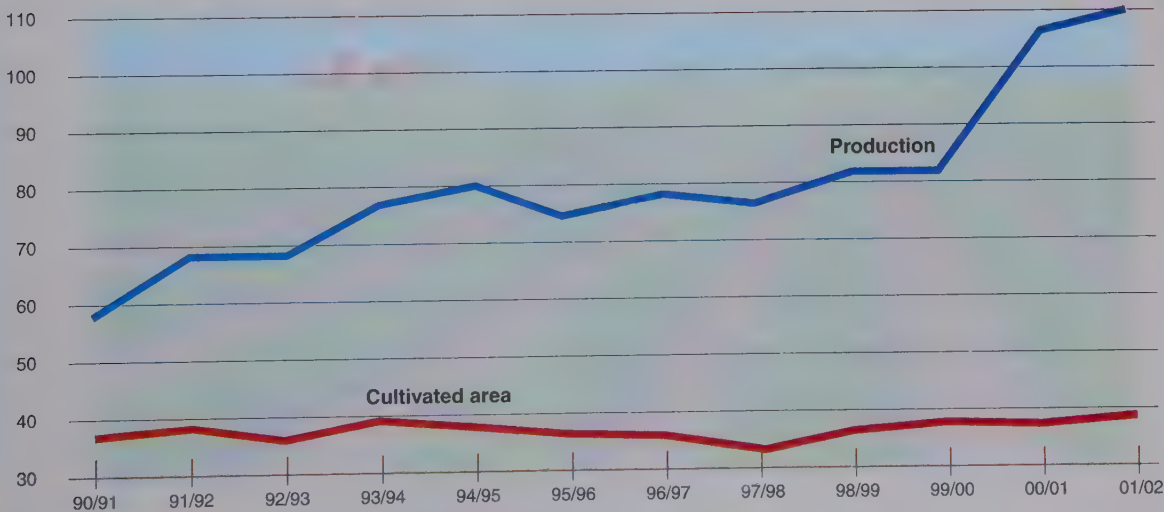
There is a kaleidoscope of data, (and insights), regarding Brazil, that is worthy of mention, even if just in a summarized way. The annual crops, and permanent crops growing on Brazilian soil occupy an area of 51 million hectares, in addition to another 220 million hectares of natural and cultivated pastures. The remaining area that is free and available for agriculture amounts to 90 million hectares, and this without touching one single meter of the 350 million hectares of the Amazon Forest, or one centimeter of the 55 million hectares of legally preserved natural reserves that make up the national parks. Hence, Brazil is in a unique position. Even with such a huge amount of available land it is worthwhile giving some thought to four traditional products that Brazil has to offer, which are: sugar and alcohol, coffee,

soybean and meat products.

In the past ten years, Brazil has been among the world's 10 major sugar producers. Since 1995/1996, it has been the world's largest exporter. Presently, the country contributes with some 11 million tons to a world market that consumed 129.5 million tons between 2001/2002. The European Union was the second largest exporter with an average of 5.6 million tons over the past five years. The sugar produced in Brazil costs a half of that manufactured in Europe. Brazil has also been the world's largest producer of alcohol since 1978. In the year 2001/2002, it produced more than 1/3 of the world's consumption: 11.5 billion liters compared to 32.3 billion. Brazil's installed capacity is 16.2 billion liters/year and exports do not reach half a billion liters. It is important to understand that we are talking about the production and commercialization of clean and renewable energy. It is also important to have an idea of the numbers involved: in 2001, sugar exports were the source of \$2.27 billion in revenues and those of alcohol \$92 million. However, by substituting petrol with alcohol, there were

Brazil - Evolution of the cultivated area and production.....

(% of total returns)



90-91/2001-2001

PRODUCTIVITY = + 70%

Source: Ministry of Agriculture, Fisheries and Supply

D. DEFANTI

further savings of \$2 billion. The repercussions of the sugar/alcohol sector on the country's trade balance came to approximately \$4.3 billion in that year.

Brazil's policies in this area do not impose any kind of distortion in terms of free trade. In the Brazilian sugar/alcohol scenario there is no form of intervention that could impinge on the criteria established by the World Trade Organization (WTO). One cannot disregard the fact that access to markets could occur in an indirect and complementary way, that is, sugar-

intensive industries setting up operations in Brazil and taking advantage of synergies with the sugar-cane processing plants. The sugar/alcohol sector is, therefore, one of the most strategic factors in Brazilian agribusinesses, not only for its potential for expansion in foreign markets but also for the ramifications it can create with other activities and investments in the country. In the context of global agreement it is imperative to eliminate, or at least draw up, a clear schedule for reducing subsidies for sugar exports from the European Union; to open

up the United States for both sugar and alcohol; and to develop a market for combustible alcohol in Japan, China and Korea, as well as internationalizing the use of combustible alcohol as is already the case in India and China, Australia, Thailand, France, Sweden and Mexico. Ultimately, in this field, the development of strategic partnerships exist for the production of sugar-intensive and sugar-chemical products. In other words, alcohol is less volatile than other speculative markets because it is based on fundamental human needs that involve human survival.

Brazil has been the world's largest producer of coffee since the 19th century, not forgetting that the world has changed a lot in the past few years. The country has been a leader in times of change. It has created new methods of cultivating coffee and, ultimately, by taking a more professional and modern approach to a traditional business, has contributed to overproduction. When the bitter frosts of the second half of the 20th century destroyed a good deal of the plantations in the south of the country, they migrated to the North. The areas of cultivation of high-grade coffee beans located in the states of Sao Paulo and Parana



An advertisement for Brazilian coffee in France.

continue producing but when it comes to the Arabic strain they have lost their supremacy to Minas Gerais and the interior of Bahia. Meanwhile, the Conilon strain has made economical inroads in Espírito Santo and Acre. Irrigation and mechanization were implemented to assist in the improvement of crop productivity, and new strains were selected. Technology, ongoing research, and a higher concentration of planting caused an increase in productivity from 10/12 sacks per hectare during the middle of the 20th century to 20/22 sixty-kilo sacks at the turn of the millennium. The Arabic strain that, in the past, represented 80% of the coffee grown in Brazil has not decreased in the volume harvested but currently represents only 65% of the total. The Conilon strain has increased from 20% to 35%. Brazil's increase in production certainly leaves room for doubts, including excess irrigation and dependence on inputs, but it is a fact that Brazil removed the fetters from the coffee agribusiness before any of the other producing countries and this has led to a number of large benefits.

This point of view is corroborated by numbers if we consider the years 1998 and 2001. In the first base year, the five largest producers in the world ranking were Brazil, Colombia, Vietnam, Indonesia and the Ivory Coast. In 2001, Brazil was still in first place but Vietnam had come into second place leaving Colombia in third. Indonesia maintained its position at fourth but Guatemala appeared as fifth. India is rising on the world market and this is a healthy sign because it should help to increase consumption as coffee comes to substitute the traditional teas consumed in Asia, especially in the case of China. The market, over the long term, looks very favorable if we take into account that 2/3 of the world population is not used to drinking coffee. It should also be mentioned that Brazil managed to control a number of blights that have traditionally affected its plantations; Colombia, however, still suffers with coffee borer, Vietnam with coffee rust and Africa with CDB (Coffee Berry Disease). Brazil (23%), Vietnam (14%) and Colombia (10%) are responsible for almost 50% of world exports. Improvements in quality and reductions in costs are intended to provide Brazil with an even stronger position in the market if it knows how to

Coffee			
	1992	1996	2001
Production (1.000 t)	2,587	2,696	1,918
Area harvested (1.000 ha)	2,498	1,990	2,353
Yield (kg/ha)	1,035.5	1,349.6	815.1
Exports (1.000 t)	1,020.8	778.7	1,256.0
Principal Producing States (1.000 t)			
Minas Gerais	1,106.1	1,252.3	952.7
Espírito Santo	513.2	607.0	458.3
São Paulo	372.8	382.8	258.6
Exports/			
Principal States (1.000 t)			
Beans in bulk			
Germany	102.3	97.6	242.65
U. S. A.	222.8	120.6	167.80
Italy	112.3	82.1	121.04
Japan	69.0	73.3	94.39

Source: Secex/MDIC, Conab/MA

handle an increase in consumption, especially amongst young people. The Brazilian blend in roasted and ground coffees supported by a more aggressive marketing campaign and the export of soluble coffees suggest that "Les cafés du Brésil alimentent l'univers" (French for: The Brazilian coffees supply the world). This could be a little exaggerated but it is a fact that overseas sales of roasted and ground coffee are on the increase. In 2001, 40,000 tons were sold overseas. This year, 2002, the volume should be somewhere in the region of 100,000 tons. Organic and decaffeinated coffees are other cards in the pack, especially in terms of the more discerning markets in North America and Japan.

The local market is also important because coffee is just as much of a national habit as black beans in the daily food. There are factories all over the country and the majority of them are small. Melitta, a German multinational company, is the second largest selling brand with only a 5% market share. It runs its Southern Hemisphere model factory in the town of Avaré (SP). The Brazilian coffee industry has invested in new equipment over the last ten years, which means it has a large production capacity available for export that requires creativity in making new blends, research, and knowledge of foreign taste habits. The changes can be seen all over the local market where Italian-type espresso coffee can be found in thousands of coffee shops. It has, of course, been adapted to Brazilian taste that places more value on the aroma than the amount of



The cultivation of soybean began in the South but expanded to the Midwest together with the migratory movements and has already reached the North and Northeast

caffeine. This is why the famous carioquinha coffee that is fairly light, without the exaggerated taste of the North American version, far outstrips its "short" cousin from Italy. However, value added exports are still a long way from having any weight in Brazil's case.

In the overall context of Brazilian exports, the results of agricultural businesses amount to \$23.9 billion, of which the soybean complex attained a 9% share in 2001. Brazil is the world's second largest producer and exporter of soybean, soybean meal and soybean oil, and is the only one amongst the major producing countries that still has a vast amount of land available for planting. This year, 2002, the Brazilian crop weighed in at over 40 million tons, which relates to 24% of production worldwide. The estimates, considering the present rates of expansion, point towards the country producing a crop of 56 million tons in 2006. The new harvesting areas are emerging exactly in places we can consider to be the new frontiers, such as the States of Piauí, Maranhão, Bahia, and Tocantins, along with another eight producing States. Presently, a decline in production can only be seen in the State of Rio Grande do Sul, which is third in the ranking, and in Santa Catarina. Mato Grosso has taken over first place from the State of Paraná, and Goiás is about to oust Rio Grande do Sul.

There is no doubt that the increase in world consumption will benefit Brazilian grown soybean even taking into account the protectionist policies that are adopted by the United States and other countries. Brazilian soybean holds an advantage due to its quality and the fact that consumption is on the rise in emerging countries, and also due to the fact that it is a source of protein that is less expensive and, at the same time, offers safety in terms of quality foodstuffs. This, of course, is not taking

into account that it is adaptable to innovations such as biodiesel, renewable energy, and is biodegradable. The World Trade Organization's multilateral approach is important in terms of bringing a sense of discipline to the market by adopting cohesive rules such as: placing agricultural goods on an equal footing with other

Soybean			
	1992	1996	2001
Production (1000 tons)	19,419	23,190	37,683
Area harvested (1000 hectares)	9,582	10,663	13,931
Yield (kilograms per hectare)	2,027	2,175	2,705
Imports (1000 tons)	570	1,106	922
Exports (1000 tons)	12,981	16,240	28,598
Grain	3,736	3,646	15,676
Meal	8,545	11,262	11,271
Oil	700	1,332	1,652
Main Producing States (1000 tons)			
Mato Grosso	3,485	4,687	9,533
Parana	3,415	6,241	8,560
Rio Grande do Sul	5,792	4,402	6,936
Exports/			
Main Foreign Markets (1000 tons)			
Grain			
Benelux	1,351	2,076	3,319
Germany	265	200	1,574
Spain	610	309	1,368
Meal			
Benelux	2,586	4,177	3,153
France	1,399	824	2,718
Germany	372	332	840
Spain	773	1,097	337
Oil			
Iran	202	177	405
China	117	780	17

Source: Secex/MDIC, Conab/MA

AGRICULTURE

D. DEFANTI



SUGAR CANE 326 million tons

ORANGES 106.6 billion units

BEANS 3 million tons

COFFEE 3.8 million tons

COTTON 2 million tons

WHEAT 1.7 million tons

SOYBEAN 1.7 million tons

CORN 32.3 million tons

THE NEW BREAD BASKET.....

D. DEFRANTI



REGIONS THAT HAVE MOST EXPANDED THEIR GRAIN PRODUCTION IN THE LAST DECADE



goods, and eliminating all of the subsidies that are the cause of distortions. Until these global commitments come into effect, however, it is important that bilateral and regional agreements be negotiated and this is something that the Brazilian government has effectively carried out; more than 300 specialists are actively working alongside the private sector. The bureaucracy, inherent in the state system, was swift in perceiving the advantages of negotiations that were more agile, less complicated, and that targeted specific markets. Two large markets are in the development stage: China, which is the world's largest importer of oleaginous products, and India, which is the largest importer of vegetable oils. China, for example, stands out with its population of 1.3 billion and an increasing per-capita consumption of vegetable oils, but also

represents a country that has essentially exhausted its potential for expansion in this field and also has limited supplies of water and fertile soil. For its part, India, with a population verging on 1 billion, has a relatively low per-capita consumption of vegetable oils due to its over-weighted tax structure and the fact that the country's production cannot be considered competitive in world markets.

The natural ally of Brazilian farmers, more so than the government, can be found in the agricultural cooperatives that, just in the State of Parana-grouped together under the auspices of Ocepar-amount to 62 entities that produced revenues of R\$6.9 billion in 2001 and are expecting a growth rate of 15% for this year. They are planning to invest R\$450 million in plants that will industrialize the products they



Corn is an important item for animal fodder and also for the Brazilian table. It can be found in sweet dishes and sour ones, such as *polenta*.



"Once-twice, beans and rice" is sung in children's school playgrounds. Beans are a daily dish in traditional Brazilian cooking.



Sugar cane, the first systematic crop at the time of the Discovery, is experiencing a new impetus from its potential for producing energy.

receive, especially in the meat sector—principally poultry and swine. In 2001, the Parana cooperatives invested R\$250 million in industrialization. It is a fact that these institutions are gaining space on supermarket shelves. Companies that just ten years ago concentrated their activities on receiving products and selling them on now see industrialization for the retail market as a source of profit and are investing in production lines with their own brand names and a distribution network to reach markets outside of their original bases of operations. Large organizations such as Coamo (Campo Mourão), Cocamar (Maringá), and Sudcoop (Francisco Beltrão), all located in the State of Parana, believe that, in the space of the next five years, the participation of retail revenue for the cooperatives will double and amount to 30% of all the sector's business. In order to sustain this initiative the cooperatives are upgrading the professionalism of their sales departments and reequipping their logistic support. Companies that previously were mostly concerned with the purchase and export of grain are now focusing on marketing at retail outlets and broadening their supply channels.

Brazil has 6,094 cooperatives of which 1,500 are in the farming sector with approximately 5 million affiliated members. In

2002, Brazilian cooperatives exported \$760 million and contributed with 6% of the Gross Domestic Product. Apart from the State of Parana, where this sector has grown the most, there are examples of towns and municipalities where the cooperatives preside over the local economy and are the backbone of progress in the region as, for example, Orlândia (São Paulo), Guaxupé (Minas Gerais), Chapecó (Santa Catarina), Passo Fundo (Rio Grande do Sul), Rondonópolis (Mato Grosso), and Rio Verde (Goiás). These institutions are, without a doubt, one of the most efficient tools for combating two of Brazil's greatest problems: the concentration of wealth and exclusion from the overall community.

Brazil is also strategic in the world scenario because of its enormous potential for producing meat, especially now that animal protein is confronting so many sanitary problems. The European countries are at odds with their fears about "mad cow" disease since the early nineties, and more recently they had to deal with a new outbreak of foot and mouth disease that was thought to be extinct on that continent. Progress in Brazil towards eliminating this disease, which has basically been eradicated throughout the country, turns Brazil into a respected player in the international scenario. The World

Organization For Animal Health (OIE) classified the Country as a number-one risk in regards to bovine spongiform encephalopathy (BSE) after Canada tried, in a pyrotechnical ploy of diplomacy, to impose sanctions on Brazil. This was really founded on the fact that the medium-haul passenger plane that Canada is manufacturing cannot compete in the international market with a similar model produced by Embraer. However, the result of the inspection made at the time resulted in benefiting Brazil on two fronts; it created media publicity for the airplane and also recognition for its healthy livestock.

Brazil's position is that of the world's second largest producer of meat with a yearly production of 6.6 million tons and the largest herd of commercial livestock amounting to about 170 million head of cattle—curiously enough, it can be said that there is one head of cattle for each of the country's inhabitants. It is also the world's second largest producer of poultry with a production of 5.5 million tons per year, and ranks amongst the ten largest in the swine industry with a production of 1.9 million tons per year. The Brazilian production of sheep, goats, and buffalo is also significant, but poultry meat is the most promising because its consumption is not restricted by religious beliefs or by the recently adopted habits in food consumption that look to control cholesterol levels and reduce animal fats. Just in 1999, the world market for chicken increased 6% compared to 4% in beef, and 5% in swine. The Ministry of Agriculture expects that exports of the meat conglomerate will reach \$5 billion in 2005, by which time, the government should have totally eradicated foot and mouth disease in the whole country and opened the door to new markets.

The Brazilian cattle herds are bestowed with certain characteristics that make the meat more appealing. For example: 99 % of the feeding occurs in pastures and the animals are raised in over 220 million hectares of land and can therefore be considered as free-range cattle. The quality of the national livestock, where 81.1% are raised in regions that are free from

foot and mouth disease, helps to win new markets, especially in a scenario where several countries are changing their traditional suppliers because of the existence of diseases. The identification of the country of origin tends to be a crucial factor at the time of purchase. In European countries, Australia, and North America it has become obligatory to adopt a tracking system to identify the origin, family stock, and pedigree of the animal. In Brazil this system is still under discussion but the French supermarket chain Carrefour, for example, is already paying a higher price for meat that has undergone the tracking process. Of all the cattle in Brazil 80% are pure zebu, (Brahma), or a result of crossbreeding of this species. The use of genetics and handling has increased the capacity for crossbreeding with European stock such as Limousin, Charolais, and Angus, amongst others. This crossbreeding process has been used to improve the quality of the animals in a search for increased weight, greater returns and earlier slaughter. The modernization of sanitary surveillance, the reduction in the time spent in the pasture, and the implementation of new technologies lead one to believe that Brazil will become the world's largest exporter of meat within the next few years. The large area that is free of foot and mouth disease is populated by around 130 million head of cattle compared to the 100 million to be found in the United States.

The prospects for expanding these numbers are quite comforting because there are several factors that contribute to increasing productivity in the livestock business, such as: improvements in the handling process and mineral supplements, rotation of pastures and eliminating embryo transfer, apart from the optimization of confinements and semi-confinements based on fodder of vegetable origin. Artificial insemination, an increase in industrial crossbreeding, and the raising of force-fed calves, all offer new advantages that will lead towards a reduction in the seasonal time-frames of production (harvest/period between harvests) that will result in improvements in the pasture time needed by the herds and lower costs for containing the cattle.

At the end of 2000, Cobb, which is a subsidiary company of the North American group Tyson and one of the world's largest companies involved with poultry genetics, started construction on a poultry reproduction plant for first-generation stock (called great-grandfathers)-these are birds that reproduce grandfathers that, in their turn, produce the active reproduction specimens-close to its main facilities in São José do Rio Preto, (São Paulo). The birds, that are genetically modified, are exported to South America and Asia. Breeding of young chickens has already passed the mark of 3 billion units per year and is growing at a yearly rate of 8%. In the southern States of the country (Rio Grande do Sul, Santa Catarina, and Paraná), and in the States of São Paulo and Minas Gerais we find the most important companies involved in slaughtering and processing, amongst which Sadia, Perdigão, Frangosul, and Seara are worthy of mention. These States represent 70% of the country's total slaughter capacity, which amounted to 6.7 million tons in 2001. The three largest producers-the United States, Brazil and China-are responsible for 62% of world production. However, Brazil and China, between them, are responsible for 77% of the total volume that is imported by the international market.

Over the last five years, poultry production has increased at an average rate of 10% per year in Brazil. The potential of the internal market and the ability to adjust to the growing needs in overseas markets indicate that this growth rate will carry on for a good number of years. Obviously, Brazil is favored by having a large amount of grain available, principally corn and soybean, and a climate that suits agriculture, apart from the fact mentioned above that the country is blessed with large tracts of arable land. One example of this latent potential is the raising of ostriches. Five years ago, this animal was a curiosity only to be found in zoos-today, there are more than 55 thousand birds being raised and around 700 breeders. The breeding process is being regulated in cooperation with Ibama, (the Brazilian Institute for the Environment), that is monitoring the

preservation of all the different aspects of this new breed: installations, sanitary conditions, relocation, and handling of the animals. Reduced purchasing power, not only amongst the Brazilian population but also in other highly populated and developing nations, raise problems that often challenge their governing bodies such as the unfair commercial practices imposed by the OECD (World Organization for Animal Health), the subsidies implanted by the European Union and the United States that affect both production and also exports. The lack of empathy on the part of developed nations with those that are in the stage of development, and to which the first are eternally in debt, should be confronted with the technological innovations, the transfer of knowledge and expertise, to contribute to a world sense of order that is in keeping with the problems we see around the globe.

The results that can be witnessed in the poultry business are not matched by those in the swine industry, which geared up in 1994, when companies concerned with genetic improvement such as JSR, Seghers, Dalland, Genetiporc, Penarlan DB-Danbred and Carroll's started operating. The herds in Brazil amount to 37.5 million head and are mostly found in the South of the country where they contribute 34.53% of the total swine population. The vast amount of land and the influences regarding raising swine that originated in Europe were the main reasons for the concentration of this activity in the South. The industry already has access to state-of-the-art technology and most of the packing plants have acquired Italian or German flavors. Genetics has been a fundamental factor in developing this sector and is helping to produce healthier meat. Over the last twenty years the fat substance of pork meat has been reduced by 31%, the cholesterol by 10%, and the calorific value by 14%. The largest investments in recent years took place in the States of Minas Gerais, Goiás, Mato Grosso and Mato Grosso do Sul. The meat production has been increasing by 4% per year over the last twenty years. During this same time, internal consumption has increased by 40% and

H U S B A N D R Y



CATTLE



170 million head

SWINE



31.5 million head

POULTRY



842.7 million head

exports have reached a figure of 265 thousand tons, which is a notable result for an activity that not long ago started from nothing. The European Union is the world's largest per-capita market for swine meat consuming 40 kilos/year, followed by the United States with 31 kilos/year, and China with 30 kilos per year. The per-capita consumption in Brazil is calculated at 11 kilos per year according to the Brazilian Association of Swine Breeders. Individually, the Danes are the world champions in consuming pork as they eat 77 kilos per year. The main markets for swine raised in Brazil are Russia and Hong Kong.

Brazil is basically a self-sufficient country regarding food and has only a small need for some items such as wheat that is imported from Argentina or Canada. Its food is rich in animal proteins, carbohydrates and vitamins that are essential to human health. The *moros y cristianos* (typical food amongst the Spanish speaking people of the Americas) are combined with African and Italian cooking, consisting of the daily rice and beans in the first case and, in the second case, spaghetti and polenta that were introduced to the Brazilian table by the 25

million descendants of Italians who make up the largest colony outside of the peninsula. This subject will recur in other chapters of this book but it must be emphasized that the curses of modern society-starvation and its consequences-are gradually being overcome. Demographic growth is stable at 1.3% a year-a level lower than that of the 20th century-and this allows administrators to plan for today's world. Corn production, that is essential for animal fodder and also largely used as food, grew by 51.4% between 1990 and 2000. This crop can be found in a large number of states and, in 2000, production came to 32.3 million tons. The "daily beans", in their turn, increased by 36.7% in the period under study and can be found just about everywhere as a subsistence crop. The production registered in 2000 was a little over 3 million tons, a number considered sufficient to stave off local hunger.

As to the production of oranges Brazil is the world leader and increased production by 21.74% in the aforementioned period. This amounted to a crop of 106.6 billion oranges to which the State of Sao Paulo contributed with



Orange groves were initially developed in the state of Sao Paulo but now occupy new areas in the North of Parana and in the Northeast.

89 billion. It was in this state that the Chemistry Institute of the University of São Paulo managed to sequence the DNA of the bacteria that causes citric cancer, a disease responsible for a 25% drop in the production of citric plants. In 2000 concentrated orange juice exports totaled 1.1 million tons and in 2001 that figure increased to 1.2 million. The European Union imports 2/3^{rds} of the total Brazilian production. The North-American market share dropped from total imports of 91% to 60% between 1992 and 2000 due to tariff restrictions and this fact caused losses of about \$1 billion to Brazilian exporters. The Asian market receives around 10% of concentrated Brazilian juice and should pick up the pace when China becoming a stronger buyer. 15% to 17% of Brazilian exports are shipped to the United States, the world's largest purchaser. A new market is emerging with the production of organic juices arising from farming processes that do not use agricultural toxins or chemical fertilizers.

When Brazilian tables are more replete this is reflected in the farming sector (it consumes more electric power-77,65% of rural homes have access to electric energy) and farmers buy more electrical appliances and electronics and purchase motor-powered equipment. They buy more tractors, harvesters and other machinery used for working the soil; the number of tractors in active use has grown from 62 thousand units in 1960 to a present-day number of 450 thousand. The purchases of shoes in the local market increased from 421 million pairs in 1995, when Brazilian industry produced 544 million pairs, to 445 million in 2001 compared to a total production of 610 million pairs. In the same five-year period, from 1996 through 2001, the total production of the textile industry increased from 821 thousand tons to 1.2 million. The consumption of wheat demonstrates a scenario that suggests that the situation in Brazil's internal market is changing for the better; in 1992, the Brazilian production was about 2.7 million tons whilst imports totaled 4.4 million. Ten years later, in 2001, the local production was 3.2 million and imports reached seven million tons.

The large contingent of low-income consumers that contributed to the sales growth figures in the first year of the "Plano Real" - the economic stabilization program of 1994-refuses to waive its newfound habits, even with the drop in average income that can be seen over the last four years. Surveys carried out by the Research Institute Foundation of the University of São Paulo and AC Nielsen show that basic necessities continue to be purchased but these products have been showing only a slow growth rate. Marketing strategies by the retail networks and credit facilities guaranteed the ongoing access of low-income consumers to more sophisticated goods. Mobile phones, 21-inch TV sets, air travel and motorcycles became a fixture on the buying lists of the economical tiers C and D. Brazilian air travel is growing at around 10% to 12% a year, the highest international growth rate. Around 35 million passengers will be occupying approximately 60% of the available seats in domestic flights in 2002. This increase in the participation of lower income classes has been forcing companies to restructure their market strategies and businessmen are discovering that Brazil is inhabited by Brazilians, and not by the Swiss.

According to a study carried out by sociologist Paulo Secches, director of InterScience, the potential market for popular products that was ignored over recent decades, is not something to be neglected. Low-income families represent more than 50% of the population and have an annual global income of approximately \$205 billion, or a yearly income of \$825 per family. This is what large companies such as Procter & Gamble, Multibrás and Fiat found out. Procter & Gamble spent a few million in the development of a type of diaper that would suit consumer's pockets. In May 1993 it launched the diaper Pampers Uni for about \$0.35, a price 50% lower than the products found in the market at that time. The result was that, about five months later, the company became the leader in this sector, a position it holds until today. The local market for the product has increased by approximately six times over the past few years, and Pampers Uni is currently produced by Procter

& Gamble in another seventeen developing nations. The shoe manufacturer Azaleia managed to grow during times when many companies could not endure Chinese competition. There are a great number of examples to show that to climb above the poverty line all that is needed is creativity and actions that are not subjected to the mandates imposed by the International Monetary Fund, which is an organization guided by a philosophy that works for the Northern Hemisphere but is unaware of the realities taking place in developing countries.

If we consider Brazil to be a country that is self-sufficient there is no doubt that foreign trade was instrumental in its development. At the same time we can certainly say that it is no longer an exporter that relies exclusively on agriculture. At the beginning of this century 80% of the population are living in cities and towns and agriculture represents 9.1% of the Gross Domestic Product.

Forecasts suggest that the Brazilian exports of the mining-metal industry will grow by \$2 billion until 2006. The total amount of revenue to be generated is thus estimated at \$7.7 billion. The expansion will happen due to the aforementioned projects apart from the production of iron pellets and decorative rocks. Brazil is the world's fourth largest exporter of decorative rocks. In 2001 its overseas sales were around \$276 million and an annual average increase of 17% and exports of \$650 million in 2005 are contemplated.

The industrial sector contributes with 31.1%, while services represent 57.8% of the GDP. The difficulties encountered during the eighties were fueled by foreign debt and galloping inflation and were overcome in the 90's by the "Plano Real". The policy of floating the exchange rate within pre-established limits was adopted soon after the Plan but it proved to be fragile, in 1997, when the first financial global crises were felt beginning with the problems in Southeast Asia. Countries that suffered what became known as speculative attacks had several things in common, such as rigid exchange poli-

cies and high interest rates that were meant to attract foreign capital. The unencumbered floatation of the exchange rate, adopted on January 15, 1999, provoked an increase in the quotation of the American dollar from R\$1.21 (at the beginning of the crisis) to R\$2.10 in February of 1999.

Initially, it was expected that the devaluation of the currency would result in an expansion of exports offset by more expensive imports. The reduction in the trade deficit would mitigate the reliance on foreign resources for achieving equilibrium in the balance of payments. It was thought that internal production would also respond positively. However, the high interest rates maintained by the Central Bank neutralized these alternatives and exports responded to the changes in the exchange rates slower than was expected. The country only started to produce a satisfactory trade balance in 2002. Then we witnessed a new speculative attack kindled by the uncertainty of the upcoming elections that caught the monetary authorities by surprise with the turmoil it created. The international scenario could be seen as a fatal opponent to Brazil's attempts to manage its economic policies even though a closer analysis would prove that international investors ended up by earning their highest returns right here. The profits of large multinational companies in Brazil were equally relevant, even for corporations losing money or with considerable financial problems in either the United States or Europe;

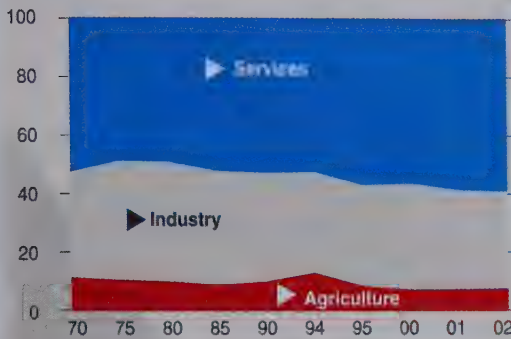
Positive projection				
Prospect for the growth of mineral exports				
Product	Exports 2001 (millions of t)	Additional 2002/2006 (millions of t)	Current price (US\$ per t)	Additional value (US\$ million)
Bauxite	4.20	1.00	22	22.0
Alumina	0.90	3.90	200	780.0
Aluminum	0.80	0.06	1,600	96.0
Iron ore	120.00	16.50	17	280.5
Iron Pellets	35.00	6.00	30	180.0
Gold	0.04	0.03	9,650	270.2
Ornamental				
Rocks	—	—	—	393.0
Kaolin	0.88	0.45	145	65.0

Source: BNDES

Gross National Product

(Participation by sector - %)

D. DEFANTI



Source: IBGE and Gazeta Mercantil Information Center

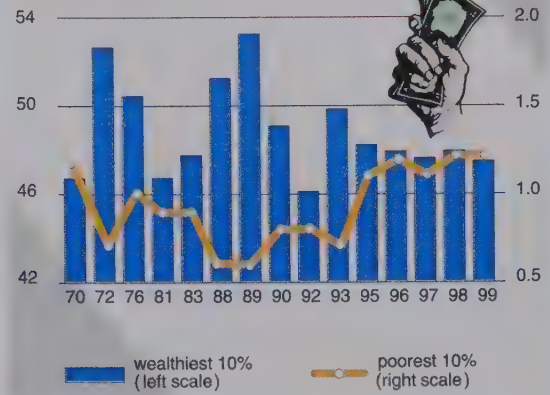
World Com and Fiat are good examples of this recent year's scenario. The Fiat Group announced world net losses of 193 million euros for the first quarter of this year. Fiat do Brasil, on the contrary, is enjoying one of its best phases ever. This, after having won market leadership in automobiles and light weight commercial vehicles in 2001, and ousting the traditional market leader Volkswagen for the first time. The Italian multinational invests about \$500 million in Brazil, a country where its operations generated profit in 2001 and continues in the positive column in 2002. Brazil also provided the Santander Central Hispano Group with 25% of its world's profits in the first half of this year, while the Dutch ABN Amro Bank obtained, in a country devastated by international financial terrorism, 22% of the net profits that it made from its overseas retail operations in 2001. HSBC had losses of \$1.152 billion however a part of those losses were compensated in Brazil where profits amounted to \$136 million using the same accounting standards.

It is curious to see, when taking a look at 2001 and the results of the top 100 local, multinational, and state companies for that year, that the first category had net revenues of R\$170.9 billion, against an accumulated amount of R\$400.6 billion by the largest 6,746 local companies. The 885 largest multinational companies had net revenues of R\$ 288.2 billion but R\$210.4 billion of this amount was concentrated in the top 100. However, the 358 state companies that have not yet been privatized were responsible for R\$127.4 billion,

Concentration of income

(% of total income)

D. DEFANTI



Source: IBGE and Gazeta Mercantil Information Center

of which R\$124.3 billion were concentrated in the top 100. Petrobrás, the oil industry giant, contributed with R\$49 billion to these numbers.

The volume of Brazilian exports is still low in terms of global international trade but, on the other hand, the expansion of the local market continues to increase. Currently, there are more than 1,000 shopping centers spread around the country compared to a number that could be counted on the fingers of one hand 25 years ago. The products on the shelves cater to Asian consumers of all dialects, Spanish, Portuguese, indigenous and black people, Italians, Arabs, Jews, and others from Minas Gerais, Bahia, Santa Catarina or the Amazon. There are beauty products for blacks and pasta for all tastes from Italian hard wheat varieties to Chinese noodles. There is a mixture of all these different races that seems to confuse the most inquisitive of anthropologists that, in the past, went off at half cock. However this nation of assorted races continues to grow. At the same time the likeable characters that Sérgio Buarque de Holanda (renowned Brazilian social-political writer) wrote about can still be found in small pockets of the interior there is also an unrelenting increase in people that have no respect for morals and will try to take advantage of any situation for their own ends. This mutation has, in a way, been brought about by television and grew with the northeastern population that spread out over the North of the country at the beginning of the 20th century, the Southeast in the fifties, and was



The technology of a central sprinkler system has been instrumental in developing irrigation and is being used in coffee plantations, doubling production in the last half century.

reinforced by migrants from the South, at the end of the millennium by the great-grand children of Italians and Germans. The latter took crops with them to the North and Northeast such as soybean, other agricultural products, and even habits such as tea. They opened up new farming lands, introduced mechanization and built ports where previously there were only bare riverbanks. Executives and managers, trained in the Southeast and South, followed on their heels and built plants in places like Manaus, Crato and Juazeiro do Norte (CE). One generation ago, they used to drink 2.5 liters of wine per capita. Today consumption can be counted in dozens and the Sao Francisco Valley boasts thriving vineyards. The people are also four centimeters taller than 25 years ago (1m71 in 1975, compared 1m75 in 2000) and have a longer life expectancy. On average women live 71 years and men 67.

From a strategic point of view it is fundamental to remember that Brazil is the only country that is the size of a continent, located in a humid tropical climate and with perennial rivers covering more than 90% of its territory. Consequently, the country is blessed with the world's largest supply of fresh water: 197,500 cubic meters per second are released into the

Atlantic Ocean. This quantity is 40% greater than the displacement of all the rivers in the United States and 47% more than those in Canada. Brazil's fresh water potential is in the order of 35 thousand cubic meters per inhabitant per year of which a little over 2% is used. Furthermore, there are still 5 thousand cubic meters a year of underground water per inhabitant. These reservoirs are fed by the infiltration of part of the rainwater into what is a relatively non-permeable layer of unsaturated geological material. Consequently, the underground water is subject to a natural process of self-purification making underground springs cheap and adaptable for the supply of more than 80% of Brazilian towns and cities.

In these past 25 years the sanitary sewage collection network grew from 5.8 million to 18.6 million homes (a jump from 33% to 43.5% of all total homes) Water that used to supply 9.2 million homes (52.61% of the total) now reaches 32.6 million or 76.13% of the total. Another very encouraging statistic is that the country shows an infant mortality rate of 33.1 per one thousand live births. This is still far above rates in the developed countries of the Northern hemisphere (less than 10), but equally distant from the fatalities

of the sixties when this number stood at 70 per thousand. If the growth of the good aspects can be considered remarkable, the increase in violence and the consequent bad aspects should also be pointed out; the total number of homicides increased from 11,194 in 1979 to 41,802 in 1998. If today Brazil looks different from the country that went through a regime where the military ran the economy (1964-1985) and through the Cruzado (1986), Bresser (1989), Verão (1989) and Collor (1990) economy stabilization plans, whilst ignoring social rhetoric, the truth is that nothing much was done to change the harsh reality of the fact that 1.6 million people are responsible for 50% of the national income.

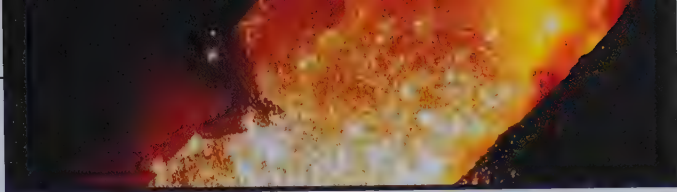
The truth is that the country grew by fits and starts over the course of one generation but it grew as much as ever before. If the country was short on funding and the private sector did not manage to create any, it was also hindered by the inertia of the State after the long period of depression during the eighties. Privatization, although at a high cost to the Nation, solved some pending issues, such as communications. The obsolescence of the Brazilian State should at least draw attention to the arrogance that the governmental machine has shown in regards to the population, and that needs to be replaced by another system that is able to respond to the challenges of globalization and to construct a more just society. The financial conundrum that has been out of tune for the last 25 years is coming to an end. Local companies paid their part of the cost of the process and society paid the rest. It is therefore fair that the time for truth has come as well as that for society to finally control the State.

The emphasis given to economical problems did not reflect on a social level, even taking into account that the Brazilian government was a signatory to the 1995 Copenhagen agreement aimed at reducing poverty around the world by a half until 2015. The Alvorada project, considered as the main project created by government with a view at an integrated structure of health, education and policies for generating income is one of society's victories that deserves to be continued and enhanced by the recently elected Brazilian government. Alvorada will rationalize the distribution of moneys for

sanitation, health, and education to needy communities as part of a program for fighting poverty. The first measure taken by the government for the preparation of the Alvorada program, was to gather information from several Ministries regarding projects that would affect the statistics comprised in the Human Development Rate (HDR) of the United Nations Program for Development. 1,962 municipalities were found to have very low rates, some even similar to those in the poorest countries. In a second phase, 390 underdeveloped municipalities were identified in nine states where the HDR is above the national average. Hence the Alvorada plan reaches 23 states with 17 social programs, amongst which is free schooling, the banning of child labor, drinking water for schools, food assistance, and health community agents.

In general the businessmen, who have been participating actively in the efforts for minimizing the social woes that still distress the Country, complain about government having been incapable of creating quicker mechanisms that would act as investment boosters. Many decisions end up by being left to the responsibility of a rigid bureaucratic structure which the president, Fernando Henrique Cardoso, at the end of his mandate, used to make a point of criticizing in the past. The truth is that the country still needs foreign resources capable of leveraging 5% to 6% growth per year. This is essential for Brazil to take its place amongst the world's great nations. It is interesting to note that a study carried out by Coopers & Lybrand includes Brazil as one of the nine strategic countries in the world. The list is headed by the United States, followed by Japan, Germany, France, United Kingdom, Italy, Brazil, China and India. Spain, Taiwan, Korea, Mexico, Turkey, Russia, Indonesia, Argentina, Thailand and Canada follow based on their respective potential. There are a number of criteria used for this classification. Brazil, for example, outclassed France in regard to the number of credit cards in 2001. It occupies the 7th position although the exchange devaluation is a factor of instability for the majority of the rankings assessed in legal currencies.





Yes Sir, this is,

Made in Brazil

The Mascarenhas family, after their arrival in Brazil in 1778, had done a bit of everything. They had traveled the outback of the State of Minas Gerais selling cloth, salt and olive oil and also bought pork rinds and sugar for export to Portugal. They worked the boilers in sugar mills and set up a general store and, after consolidating their monopoly of the salt business, started to amass their fortune. They entered into some tentative financial activities but eventually established themselves as farmers.

The farm that was to become the clan's headquarters was settled in 1847 in Taboleiro Grande, near to Curvelo (MG), and was home to the patriarch of the family, Antonio Gonçalves da Silva Mascarenhas, one of the richest men in the province, together with his thirteen children. The property grew year by year and took on the same bustling life-style of a medieval European township; apart from the slaves who tended to the plantations and animals, there were carpenters, ironsmiths, tailors, shoemakers plus twelve rudimentary wooden looms used for weaving clothes for the workers and sacks for the agricultural products. The only materials they needed to acquire were iron, kerosene and salt,

the latter being a commodity still under the family's control.

Bernardo Mascarenhas, one of the younger members of the family, made an attempt to follow in his father's footsteps but was too restless for farming or commerce. So, in 1868 at the age of 22, he decided to forsake his part in the salt business and persuaded two of his farmer brothers to complete the capital he needed to open a textile factory. Against his will he agreed to the imposition that the factory be built near to the family farms, where it could be watched over by the elders of the clan, instead of in his preferred location Juiz de Fora where there was a large center of consumption at the time.

The Cedro factory was no longer a dream but it would take another four years to become

that had never been seen in the region before: during two months twenty ox-carts, together with their reserve teams of animals, made an arduous journey of sixty leagues into the hinterland until they arrived at the site of the future factory carrying 50 tons of machines in huge crates. After a number of problems with the Americans who had been hired to assemble the machines the factory finally went into production in 1872.

This bold enterprise signified a tremendous advance if compared to the traditional way of producing cloth that was basically spun domestically. It also introduced the concept of salaried work to the interior of Minas Gerais. It was evident that it would be impossible to fill the 70 odd jobs with their own slaves who would normally be the source of the labor. The cost of acquiring these workers would be 10% higher than the total amount paid for the machinery and would represent a large capital investment. The system of hiring salaried workers, even with the expense of building a village to house them, proved to be a far more rational option.

The factory concentrated on producing cheap textiles to compete with imports and to win the preference of the constantly growing consumer market, especially that of Rio de Janeiro, the capital of the Empire. The business prospered and, as a result,

Bernardo's other brothers decided to enter the industrial sector. This initiative resulted in the founding of the Cachoeira textile industry, in 1887, as an entity totally independent of Cedro.

Both of these businesses grew side-by-side until April of 1883 when they eventually merged and became Brazil's first public company. The formation of the Cedro and Cachoeira Spinning and Textile Company took place just three months after an imperial decree was issued establishing the regulations for



The Cedro e Cachoeira factory, founded in 1872, shown here in the first quarter of the 20th century when it was already a successful business.

a reality. First, a waterfall had to be found with enough water and height to turn a water wheel to supply the mechanical energy for the machinery by way of a system of axles and gears. Afterwards, there was the period of waiting for the machinery to arrive in Juiz de Fora that would gin the cotton to produce the thread and weave the cloth that had been ordered from New Jersey, in the United States. At the time, this town was literally the end of the line in terms of the railroad network. The last stage of the process resulted in a spectacle

public companies in Brazil. The Country was on the move and Bernardo Mascarenhas was an important figure in defining these changes. He invested in civil construction, helped found and direct Banco de Crédito Real de Minas Gerais (the Royal Credit Bank of Minas Gerais) and founded the Cia. Mineira de Eletricidade, (the Minas Electricity Company). The latter turned Juiz de Fora into the first city in Latin America to be illuminated by energy generated by a hydroelectric plant. Curiously, the company he had built only adopted electrical energy as its driving force in 1929 when it inaugurated its own hydroelectric plant in Serra do Cipó.

The legacy of the Mascarenhas family is one of the most enduring in the history of Brazilian industry. The group currently operates five factories and has an aggressive policy towards strategic alliances in order to stay technically up to date in the competitive textile market. Furthermore, the group has always managed to understand the social/economical changes of the times, to learn from previous experiences and achievements and foresaw the migration of capital from the agricultural and commercial sectors to industry that would, eventually, become the predominant factor in the Brazilian industrialization process.

Before the Mascarenhas family a lot of pioneers had tried to overcome the first phase of basic production, but they were not financially strong enough to compete in a free market with imported products. Imports took the forefront as from 1808 when the ports were opened up to free international trade. Foreign goods, produced with better technology and on a larger scale, took over the local market even with an import tax of 15% that remained in effect until 1844.

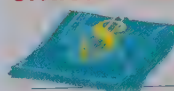
During the second half of the 19th century, the country gradually increased its import duties which helped create conditions for the recuperation of industrial activities. This tax policy was not intended, specifically, to create a protected and comfortable environment for local industry. It derived essentially from the National Treasury's need for funds. However,

a number of businessmen knew how to take advantage of the new historical and economical realities. One of them was Irineu Evangelista de Souza who was honored with the title of Baron and Viscount of Mauá and, apart from being a pioneer, was one of the kingpins of Brazilian industrialization. In 1846, he founded the Companhia Ponta da Areia thereby inaugurating the Brazilian shipbuilding industry and, in a short amount of time, he had expanded his businesses to include ships, steam boilers, sugar mills, cranes, presses, munitions and pipes. From the heavy industry sector he expanded into services (public lighting and gas as well as submarine cables for telegraphic communication with Europe), logistics, (railways), and finance (with the Mauá MacGregor Bank). His work literally paved and railroaded the paths that would be followed in the decades to come by other businessmen.

Even though things got off to a slow start, industry, over the years, encountered an increasingly favorable environment for development. From some 200 factories operating in 1881 this number had risen to 600 by 1889, the year of the Declaration of the Republic and when the Brazilian people started to enjoy the newfound freedom that would lead to order and progress.

At that time, the Brazilian industrial complex was predominantly based on agriculture. About 60% of the capital invested

Participation of industry in the critical mass of salaries



	Salaries (%)	Wage Earners (%)	Number of Companies (%)
Government	27.01	23.55	0.29
Transformation Industries	22.43	20.64	9.91
Commerce	9.83	16.38	49.76
Services	7.99	9.96	13.30
Financial Sector	6.67	2.43	1.28
Health and Social Services	6.67	2.43	2.13
Transport, warehousing and communications	6.29	5.49	3.27
Education	5.47	4.01	1.55
Others	3.03	4.38	7.83
Construction	2.61	3.73	2.68
Utilities	2.09	0.90	0.03
Tourism, food and beverage	1.41	3.17	7.03
Agriculture and husbandry	0.75	1.37	0.64
Extraction Industries	0.46	0.37	0.28
Fisheries	0.01	0.02	0.03

Source: IBGE (Central logging of Companies/2000)

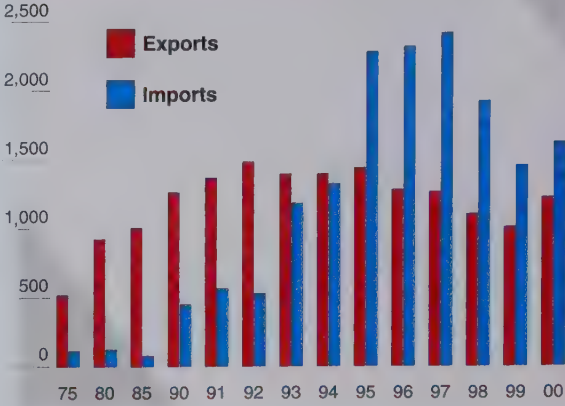
in industry was destined to the textile sector boosted by the Country's abundance of cotton and another 15% went into the food industry.

Industry entered the twentieth century on a wave of expansion that would, in a short while, turn this sector into the nation's principal economic activity finally surpassing agriculture. In the first Brazilian census, in 1907, there were found to be 3,285 establishments of which 40% were concentrated in Rio de Janeiro, which was the capital of the Republic at that time. In 1920, when the next census was carried out, there were 13,336 industries diluted in innumerable activities and with predominance (42%) dedicated to the production of food. This sector had overtaken textiles in terms of economic importance. Such a significant expansion in little more than a decade was due to the explosion of the First World War that affected international commerce and obliged Brazil to substitute imports and, at the same time, created opportunities to export industrialized foodstuffs to the countries involved in the conflicts. It is interesting to note that the 1920 census revealed a country with many characteristics that are still valid today such as:

- a vocation for agricultural business and a high degree of competitiveness in this sector,
- a significant participation of foreign capital in the industrial complex. Between 1910 and 1920, companies such as Pullman Standard (railway wagons), Ford (automobiles), Wilson and Company, Armour, Swift and Anglo (foodstuffs), amongst others, set up their businesses in the Country.
- the steel business became a modern-scale industry with the creation, in 1917, of Companhia Siderúrgica Mineira that, later, in 1922, would become Companhia Belgo-Mineira.

Brazilian industry reached maturity, however, in the nineteen forties when, once again, it was necessary to substitute imports because of another world war. It was in this period that Companhia Siderúrgica Nacional was inaugurated and became one of the most important benchmarks in the history of Brazilian industrialization apart from defining

Textile trade balance
(In US\$ 1,000,000 FOB - 1975 to 2000)



Source: Secex/MDIC developed by ABIT

the bases for the development programs that would come in the following decades and that would consolidate the industrial complex as we know it today. Brazil left the twentieth century with more than 218 thousand industrial establishments that are responsible for 33% of the Gross National Product. According to information from the National Confederation of Industries relating to 1999, the food and beverage industry continues to contribute the highest added value to the industrial sector (16.32%), followed by chemical products, (13.97%), petrol refining and the production of alcohol (9.92%), basic metal parts (6.15%), vehicles (5.96%), and machines and equipment (5.47%). The textile sector, that was the forerunner in the first days of manufacturing, currently corresponds to 3.11% of industrial added value.

The process of development and consolidation of Brazilian industry has gone through several stages in which official policies provided incentives towards the diversity of the whole complex. In the fifties and sixties, the emphasis was on the automobile and metal-mechanical industries as well as in steel. In the seventies, the vector of the state planning switched its sights towards petrochemicals, the paper and pulp industry, and other sectors. After this, it was the turn of the electrical-electronic group. In the nineties, however, the national economy went through a liberalizing shake-up. The State abandoned its role of being

the investor or incubator of development in order to allow the logistics of the market to prevail. The ports were opened up for the second time, meaning that protectionist barriers were removed and local industry found itself in the global marketplace with its ensuing competition but, at the same time, with the doors open for the importation of modern machinery and equipments. Furthermore, this was also the decade that witnessed the privatization of sectors such as telecommunications, electrical energy, steel, and mining.

The response from the private sector to the new scenario, principally in the second half of the nineties, can be seen in the extent and omnipresence of the cycle of investments that will probably carry on for the next five years. The statistics relating to investment in industry in the first half of that decade made a large jump as from 1995. Taking 1991 on a par of 100, the index in 1995 surpassed 150, and reached its peak in 1997, with an index of 240. This means, in practical terms, that the investments in industry were superior to the GDP of 3%. These investments slowed down for a while in 2001 due to fears of a collapse in the supply of electrical energy, but, even so, remained above the levels seen in the eighties and early nineties.

The investments made at this time can be divided into two different cycles: until 1997, they were oriented towards modernization and afterwards the target was the expansion of installed production capacity. The stability of the currency and the opening of the economy to foreign trade was the fuel for this new round

Brazilian steel production – 2002.....

Accumulated from Jan to July in thousands of tons

D. DEFANTI

	2002	2001	Var. (%)
Raw steel	16,634.20	15,360.40	8.3
Cut steel	10,573.30	10,782.60	-1.9
Sheet steel	6,313.60	6,398.60	-1.3
Girders	4,259.70	4,384.00	-2.8
Semi finished	4,953.10	4,006.80	23.6
Plates	3,924.30	3,105.30	26.4
Blocks	1,028.80	,901.50	14.1

Source: IBS

of modernization. During this phase the industries' priorities lay with bringing their equipment and processes up to date, reducing costs, eliminating bottlenecks, becoming more efficient and positioning themselves to take on global competition.

Steel production is a good example of this stance. The Brazilian steel industry, which comprises seven groups, with 12 companies and 26 mills, radically changed its profile in the nineties due to the privatization process that involved the producers of rolled steel and programs that led to the modernization of the industrial plants. Since 1994, the sector has invested over \$11 billion, according to information from the Brazilian Steel Institute, and is ready to initiate another round of heavy investments. The modernization of the Brazilian steel industry prompted a high rate of efficiency and international competitiveness causing the country to become a major player in terms of exports. In 2001, the sector sold about \$2.3 billion overseas and this amount should reach \$2.5 billion in 2002 despite all of the protectionist measures that have been adopted in international markets. The data relating to 2001 shows that the steel sector made a positive contribution to the Brazilian trade balance by generating a surplus of \$1.7 billion.

This new round of investments in the sector will be aimed at expanding production capacity. Currently, the steel complex has an installed capacity of 30 million tons per year, and a production of 28 million tons is expected for 2002. Between 1990 and 2001, the consumption of steel increased at an average rate of 6% per year, whilst the GDP grew by

World production of raw steel.....

Per country – 10 largest (millions of tons)

D. DEFANTI

	2000	2001	2002*
1 China	127.2	148.9	100.1
2 Japan	106.4	102.9	61.3
3 U.S.A.	101.8	90.1	52.5
4 Russia	59.1	57.5	33.5
5 Germany	46.4	44.8	26.2
6 South Korea	43.1	43.9	26.1
7 Ukraine	31.4	33.1	19.4
8 Brazil	27.9	26.7	16.6
9 India	26.9	27.3	16.3
10 Italy	26.8	26.7	16.1

Sources: IISI and IBS *Accumulated over the first 7 months

an average of 2.6%. It is possible to make a projection, based on a conservative estimate of economic expansion, that the local market will need at least another one million tons per year. If economic growth over the next few years stabilizes at 4%, then the extra demand for steel will grow to 1.5 million tons per year, quickly exhausting the Country's current production capacity.

In the last quarter of 2001, Companhia Siderúrgica Nacional (CSN), located in Volta Redonda in the State of Rio de Janeiro, concluded a program for updating and modernizing its Presidente Vargas plant. This consumed \$2.25 billion over the course of six years and the investments included the construction of a thermoelectric plant. During the last quarter of 2001 the modifications to blast furnace 3 and the hot sheet roller number 2 started to bear fruit: production of raw steel increased 13% compared to the same period of the previous year permitting an increase in sales of 11%. The modified equipment began cutting the steel with digital production controls and allowed for a 15% increase in the production of sheet steel, consequently making the company more competitive because of gains in scale. Like CSN, practically all of the other companies have plans for expansion that are either being carried out or are in the planning stage. This will consume, on average, \$1 thousand per ton/year of production capacity added to the current production base. The implementation of these projects will reflect in benefits for the whole of the economy as 60% of the investments correspond to capital assets supplied by third parties. Additionally, the sector, which is already responsible for 70 thousand direct jobs and 400 thousand indirect ones, will need to expand its workforce.

This model of investment can be found throughout all sectors of industry and it would be true to say that these companies came out of the nineties far more competitive than when the decade began. Several statistics lead to this assumption but two of them deserve special attention: the number of companies that



obtained ISO 9000 certification, and the improvement in the rate of work productivity. Created in 1987, the ISO 9000 standards started to be adopted in Brazil as from 1990, with the implantation of the Brazilian Program for Quality and Productivity. That year, there were only 18 companies in the country that were ISO 9000 certified. By 1999, this number had risen to 5,545 and, in 2001, the number of certificates increased to 9,396. This performance confirms the advances in the search for quality amongst business people and reflects the rise in the degree of internationalization of the Brazilian economy, principally because the adoption of these standards constitutes an important competitive edge as far as international commerce is concerned. In comparative terms, the number of certificates issued to Brazilian companies exceeds those of Spain (8,699) and is five times larger than those in Mexico (1,843 certificates).

Likewise, work productivity in industry, had been stagnating during the eighties, but increased during the last decade. Taking the 1991 index on a par of 100, work productivity increased to 185 in 1999, and 203 in 2001. Other indications are found in research carried out by the National Confederation of Industries (CNI), the National Bank for Economical and Social Development (BNDES), and the Service in Support of Small and Medium Sized Companies (Sebrae) that, after analyzing 1,158 companies of various sectors and sizes from all over the country, drew up a profile of competitiveness at the end of 1999. Compared to the previous year, the



The blast furnace of Companhia Siderúrgica Nacional, in Volta Redonda (RJ).
The company has become more competitive

companies showed clear signs of an increase in productivity and involvement overseas, such as:

- an increase in the participation of exports in net operational revenues from 10.8% to 12.1%;
- the rate of recalls fell from 19%, in 1997, to 12%, in 1999;

- the rate of defects fell from 5% to 4%;
- the average rate for research and development grew from 1.1% to 1.3% and arrived at 2.8% in the machinery and electrical devices and material sectors;

- investment in the education and training of employees advanced from 0.7% in 1997 to 0.8% in 1998, and reached 1% in 1999;
- investment in product design rose from 0.8% to 1%;

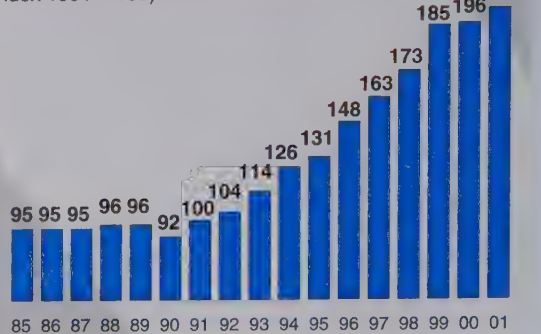
- investment in the environment grew from 0.7% to 0.8%.

At the same time these statistics show that the companies still have a lot of challenges ahead of them but, without a doubt, they are on the right track. This can be confirmed by the fact that, after ten years of free trade the basic structure of Brazilian industry remains intact or, in other words, all of the sectors found a way to adapt to the new competitive scenario.

Some companies were creative enough to reinvent themselves and become important participants in the international business world. One example is Embraer, the world's fourth largest airplane manufacturer and an example of Brazil's ability to develop and absorb

Productivity in industry

(Index 1991 = 100)



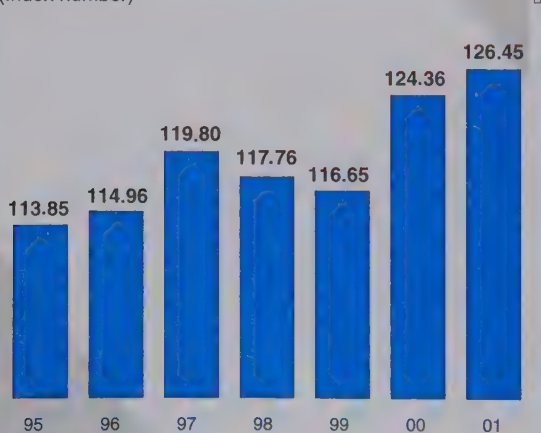
Source: IBGE (PIM)

technology as well as which proving its capacity to operate in a business-like way. When it started up at the end of the sixties, surrounded by institutions such as the Air force Technological Institute (ITA) and the Air force Technical Center (CTA), both located in São José dos Campos in the interior of the State of São Paulo, the company pursued state-of-the-art technology. From the launching of its first aircraft, the Bandeirante, that revved its engines for the first time in October 1968, until the launching of its executive jet, the Legacy, that was approved for operations in the United States at the end of the third quarter of 2002, the company underwent several changes that included its privatization in 1994.

At that moment in time the company was financially fragile, and this required its controlling parties to implement a program for improvements and repositioning in order to survive in the competitive international commercial aviation market. In the period from 1996 through 2000, the company invested \$750 million, of which \$150 million were allocated to the production process, and \$600 million to product development. As a result, the company came out of the red three is later and by the end of 2000 it already held 49% of the international market of 30/60-seat aircrafts. This triggered the rancor of its international competition and started a brutal commercial war between Brazil and Canada, the country where the Bombardier aviation industry first started and that began

Industrial production levels

(Index number)



Source: Ministry of Development, Industry and Foreign Trade

losing market share with the arrival of Embraer. One of the technological leverage strategies used by the company was the sale of 20% of its voting capital to a group of European aerospace companies - Dassault Aviation, EADS, Snecma and Thales, shareholders that helped by providing technology. The controlling block of the company comprises Cia Bozano and the Previ and Sistel funds, which, between them, hold a total of 60% of its capital. In the five-year period started in 2001, the company initiated an investment program in excess of \$1.4 billion, mainly aimed at the development of new products, and that would result in a new aircraft for up to 108 passengers. This aggressive strategy led the company to become Brazil's largest exporter (\$2.7 billion exported in 2001) and to close the year with a profit 70.6% above that recorded in the previous returns, in addition to booked orders of \$11 billion for the next years.

Embraer is not an isolated success story. It is a part of a list of 39 companies that, in 2001 and subsequent to adopting programs for incrementing efficiency and technological updating achieved their best operating levels and financial income since 1994, considered to be

the year of stabilization for the Brazilian economy. On average, the profit of the Brazilian public companies grew 7.9% in the two-year period between 2000-2001, whilst, during the same period, companies in the United States, Mexico and Argentina, for example, saw their results shrink. The Brazilian results are remarkable since they happened in an international scenario of uncertainties marked by the Argentine crisis, the deceleration of the North-American economy and the war against terrorism, locally, internally, the consumption of electric energy was being rationed.

The list of leaders in terms of profits in 2001 includes companies in the mining and steel sectors (Companhia Vale do Rio Doce, Usiminas, Gerdau and Caemi), metal (Confab, Forjas Taurus, Eluma and Metisa), food and beverage (Ambev, Sadia, Perdigão, Cacique and Iguazu Café), telecommunications (Telesp, Brasil Telecom and Telemar Norte Leste), vehicles and parts (Embraer, Metal Leve, Marcopolo and Randon), pulp and paper (Suzano), tobacco (Souza Cruz), industrial machinery (Weg, Embraco, Romi and Kepler Weber), electric energy (Coelba), petroleum and gas (Comgás and Ipiranga), chemical and pharmaceutical (Rhodia-Ster, Adubos Trevo



Roll out of the first 70 to 108-passenger jet model manufactured by Embraer. The company has become a major player in the international market.

The Brazilian automobile industry

Manufacturers – February 2002 (Inaugurations since 1996)



Company	Product	Location	Year
Case (CNH)	sewing machines and harvesters	Piracicaba-SP	1997
DaimlerCrysler	automobiles	Juiz de Fora-MG	1999
Fiat Automóveis	engines	Betim-MG	2000
Ford	the "Amazon" light transport vehicle	Camacari-BA	2001
General Motors	components	Mogi das Cruzes-SP	1999
General Motors	automobiles	Gravatai-RS	2000
Honda	automobiles	Sumare-SP	1997
International	trucks	Caxias do Sul-RS	1998
Iveco	engines	Sete Lagoas-MG	2000
Iveco Fiat	light transport vehicles and trucks (Fiat), light transport trucks and buses (Iveco)	Sete Lagoas-MG	2000
John Deere	harvesters	Catalao-GO	2000
Land Rover	light utility vehicles	Sao Bernardo do Campo-SP	1998
MMC (Automotores Mitsubishi)	light utilities	Catalao-GO	1998
Nissan	light utilities	Sao Jose dos Pinhais-PR	2001
Peugeot Citroen	automobiles	Porto Real-RJ	2001
Peugeot Citroen	engines	Porto Real-RJ	2002*
Renault	automobiles	Sao Jose dos Pinhais-PR	1998
Renault	engines	Sao Jose dos Pinhais-PR	1999
Toyota	automobiles	Indaiatuba-SP	1998
Volkswagen	engines	Sao Carlos-SP	1996
Volkswagen	trucks and buses	Resende-RJ	1996
Volkswagen Audi	automobiles	Sao Jose dos Pinhais-PR	1999
Volvo	industrial plant	Curitiba-PR	1997
			1999
			2000

Source: Anfaeva

*Start up planned for November 2002.

and Biobrás), textiles (Coteminas, Wembley and Teka), plastics (Petropar), industries and trade (Lojas Renner). It can be seen that these commendable results were achieved by almost all of the sectors of the economy. Conspicuous by its absence from this list is Petrobras which, apart from being the most profitable Brazilian company, recorded, operating profits of R\$18.6 billion in 2001, which were lower than its R\$20 billion record in the previous year.

The second cycle of investments, that occurred the turn of the millennium was aimed at extending production capacity and launching new products. The strategy of the companies resides in their need to conquer new markets, be they internal or external, and fulfilling the domestic demand that, everything indicates, will

increase over the coming years. Due to their innovative features new investments are starting to change the country's economical map. After several decades of geographican concentration in the Southeast region, especially in the State of Sao Paulo, new enterprises have set their roots all over the country suggesting that the concentration of industry will continue to become more dispersed.

This is one of the most remarkable phenomena of the nation's recent years which was not directed by State doctrine or planning but came about due to the liberalization of the market.

The new demographic reality came into play. The growing population gathered in several different centers around the country and generated important nuclei of consumers that

would attract and provide a market for new manufacturers and suppliers of services. This phenomenon encouraged companies to settle closer to consumer centers, and, at the same time, the provinces that were the producers of raw materials were gearing up for attracting new investments. The tax war among states—a mix of tax waiver and incentive programs granted to new investments—ended up by stimulating the concentration of new investments and was decisive, for example, in the creation of the automobile industry cluster in Parana, and the installation of Ford's facilities in Bahia and those of General Motors in Rio Grande do Sul. It is curious to observe that, reflecting the competition between the states, municipal competition also arose and they started offering benefits to attract investors. This trend on a municipal level was perceived by CNI, through a joint survey carried out with the Economic Commission for Latin America (Cepal), as a factor that was seriously considered by businessmen when making a decision regarding the location of new enterprises.

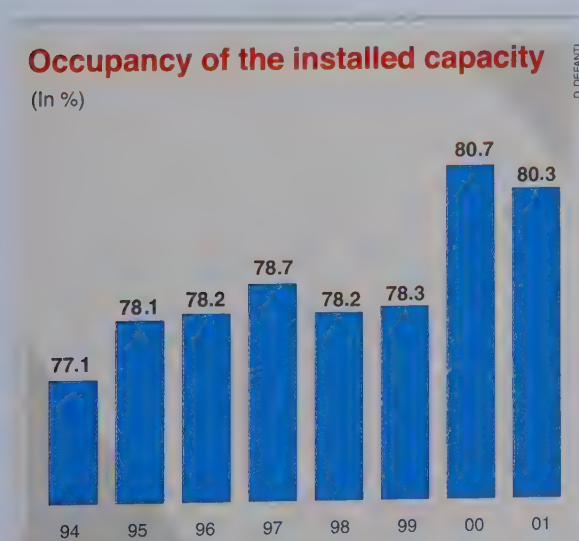
The geographical distribution of new investments did not, however, mean less investment in the traditionally industrialized regions. The interstate investments were predominantly aimed at expanding the production capacity of the investing company without running down their original facilities.

The same CNI/Cepal survey indicates that more than 40% of the new plants outside their place of origin were meant to produce new types of goods and lead to modernization of the product line and larger production capacity.

The case of the automobile industry clearly illustrates the trend of the economical tenure of the territory and deserves special focus due to the dynamic activity of the sector in its interstate relations whilst it creates a comprehensive network of suppliers of parts, inputs and services close to its assembly units. Thus, the economical effects of the installation of a vehicle plant are not restricted to the company but are multiplied and extended over the following years.

The automobile industry, due to a mix of economical and logistical factors, was first organized around São Paulo in the fifties. The first expansion of the sector, still in the seventies, placed Minas Gerais and Parana on the map of the national automobile industry, with the implementation of Fiat Automoveis and Volvo, respectively. The second and more intensive cycle of investments, in the nineties, expanded on the geographic distribution. Volkswagen, one of the pioneer assembly plants in Brazil, implemented manufacturing facilities in Rio de Janeiro (buses) and in Parana (Audi). Mercedes-Benz (Daimler-Chrysler) chose Juiz de Fora, in Minas Gerais, for the production of its automobile. General Motors expanded to Rio Grande do Sul and Ford to Bahia. Mitsubishi opted for Catalao, in Goias, Renault and Nissan preferred Parana and PSA Peugeot Citroen settled in Rio de Janeiro, whilst Honda and Toyota invested in the interior of São Paulo.

Parana is a role model. The structuring of the local automotive cluster definitely consolidated the industrial trend of a state that was traditionally considered to be different because of its strong agribusiness. Currently, the assembly plants in Parana are responsible for some 10% of the national vehicle production compared to a participation of a mere 0.8% in 1995. This change was due to a combination between tax incentives, infrastructure, guaranteed energy supply and modern facilities that, from 1996 onwards,



Source: Ministry of Development, Industry and Foreign Trade

PRODUCTION AUTOMOBILES

2001

D. DEFANTI



Cars → 1.495.622



Buses → 23.373



Trucks → 77.342



Tractors → 119.331



Motorcycles → 753.160



Pickup trucks → 182.561

represented investments amounting to \$2.8 billion in new units and expansions. Furthermore, the manufacturers prompted the installation of 40 automobile part industries that injected a further R\$1.6 billion in the construction of their manufacturing units in the region.

Prior to this cycle of investments local automotive production was concentrated in the assembly line of buses and trucks (Volvo) and agricultural machines (New Holland). Currently, the compact and lightweight commercial vehicles that are produced in the assembly lines of Renault/Nissan and Volkswagen/Audi, in Sao Jose dos Pinhais, in the metropolitan area of Curitiba, are predominant. After investing \$1.35 billion in Brazil the company is already harvesting the results of its implementation. After only three years it is ranked amongst the top five in the sector. It completed 2001 with 4.6% of the market share of compact and lightweight commercial vehicles and has an installed production capacity of 200 thousand units per year. Its complex comprises the plant that produces the models Clio and Scenic, and an engine unit, in addition to a stamp shop and, since the end of 2001, an industrial plant for its utilitarian models with its associate company, Nissan.

With these new revolutionary plants the local assembly units are also used by their head offices to test new production systems. The Volkswagen/Audi unit, considered as one of the most modern of the group's plants in the

world, inaugurated a triangular assembly model. As opposed to the linear system, in which the different sections are organized in a straight line, the body, painting and assembly sections converge to the same center. This facilitates the exchange of information and speeds up production.

The Audi model A3 produced in this unit competes, inch for inch, with the company's plant in Germany for the title of best in the world. The Audit, an internal quality-assessment program carried out in 53 plants in 14 countries, granted the record score (1.2) to the model produced in Brazil, outclassing the same car made in Germany. Likewise, in less than two years, General Motors and Ford installed, in Rio Grande do Sul and Bahia, respectively, plants that became benchmarks for both multinational groups. The two assembly units created production systems that are highly integrated with their suppliers who are responsible for delivering sets of components in order to make the final assembly of the vehicles easier. They have real time communication with their partners and consumers can order their cars on the Internet.

General Motors mobilized investments of about \$600 million from their own coffers, suppliers and government to open their unit in Gravatai, Rio Grande do Sul, in July 2000. It has an annual production capacity of 120 thousand vehicles. The plant was designed to operate one step ahead of the just-in-time system by receiving parts and sets of components in tune with the vehicle orders made through their network of vendors and the Internet.

Seventeen satellite companies (suppliers of components) were built in the neighborhood of the plant they and respond for 85% of the value added per vehicle and deliver their production through a network of couriers, eliminating the need for stocking inventory. The arrival of GM created new business opportunities for 450 local companies including service suppliers who employ approximately 2 thousand people. The arrival of the plant consolidated the Rio Grande do



The Audi A3 model, produced in the metropolitan area of Curitiba (PR), competes with that manufactured in the German head office for the title of world's best



General Motors plant in Gravataí (RS). It has the capacity to produce 120 thousand vehicles a year and operates without inventories

Sul transport complex for material and agricultural machines that also includes Agrale (trucks, buses and tractors), AGCO (Massey-Ferguson tractors and harvesters), John Deere (harvesters), Marcopolo (bus chassis) and Randon (off-road truck trailers and semi-trailers). However, the installation of the Ford Brasil plant, in Camaçari, Bahia, required the largest investment of recent years in one sole project in Brazil. \$1.9 billion were invested to house Ford's assembly line in over 220 thousand square meters of built-up area. It has a production capacity of 250 thousand vehicles per year and shares the facilities with 13 suppliers and another 14 whose facilities were built on the same property.

This project's level of integration between the assembly line and suppliers is the highest the company has attained in the world. Firstly, Ford transferred to its partners a large portion of the assembly tasks. Thus, at the end of the production line the automobile is finalized based on the assembly of 700 sets of parts as opposed to the traditional system that involves 5,000 different items. Furthermore, the number of suppliers was reduced and each one of them adds more value to the process. Under the same roof, workers using the uniforms of different companies produce pieces, parts and components that go straight to the final assembly line with remarkable savings in time and resources. In a parallel operation, suppliers located in Sao Paulo and Minas Gerais created an ongoing flow of road transport to the plant in an operation of logistics that also uses railways

and maritime transport. To conclude the logistics infra-structure necessary for the optimization of the flows of reception of components and the dispatch and export of vehicles a road-railway terminal and a harbor are being constructed, in Aratu, the latter having 12-meters of depth that will allow it to receive 200-meter long ships capable of transporting from 1.5 thousand to 2 thousand cars. The Fiesta, a vehicle produced in this unit will be exported to Argentina, Mexico

and Venezuela from this terminal.

PSA Peugeot Citroen, an association of the two French brand names, set up business in Porto Real, Rio de Janeiro, with the same concept of high integration with suppliers. Next door to the assembly line, which demanded investments in the order of \$600 million and have already been extended for the production of another model, lies the Tecnopole which accomodates four component suppliers and a logistics company. This business complemented the Volkswagen bus and truck plant, in Resende, that was a \$300-million investment concluded in 1996.

As a consequence of the development of the automotive nucleus of Rio de Janeiro new companies were installed on the axis of the Dutra, a highway that connects the two main metropolitan regions in the Country. Amongst these new businesses there is a manufacturer of bus and truck chassis, who supplies Volkswagen, a producer of abrasives for heavy mechanics, a concrete company and another that renders industrial waste incineration services. The map of Brazilian industry therefore continues to redefine itself favoring the creation of new diversified production clusters in which one can note a trend for regional specialization.

During this new wave of investments the state of Sao Paulo, the principal and most traditional Brazilian center of industry, showed a trend to shelter technology-intensive industries, by bringing together large contingents of specialized labor, important

university and research centers, and a broad consumer market for high value-added products. Lucent Technologies opted for Campinas, 100 kilometers from the capital of the state to install its optic fiber and telecommunications equipment plant.

The same happened in the pharmaceutical industry. Novartis, a result of the merger of the Swiss companies Ciba-Geigy and Sandoz, concentrated its production in Sao Paulo. Aventis, a merger of Rhodia Farma and HMR, opted for the same state. This behavior unveils a current trend for the high-technology industries to remain concentrated in the same region. In Brazil these companies represent 2.1% of the number of business establishments however they are responsible for 8.1% of the industrial revenues.

Dell Computers a world leader in the direct selling of computers also sought to stay close to university centers when it chose the location of its plant in Brazil. The company opted for Rio Grande do Sul where it invested \$66 million in 1999 with the aim of being strategically placed to meet the demand of the whole South Cone market. Their bet was right as, three years later, the company already plans to expand its line of products by negotiating with suppliers to encourage them to install business facilities in the vicinities of its plant and is extending its software development center. Its current line of products, which comprises desktops, notebooks and servers should be extended by substituting of the imports of web equipment, something increasingly in demand as information technology gains ground amongst companies. The plastic cabinets used on the computers, also imported, will be manufactured in Rio Grande do Sul by a supplier who is negotiating to move its facilities closer to Dell.

The most important decision by the company, however, was to triple the software development center that was operating in the same building as its plant. The laboratory, now with 60 professionals, was transferred from its original facilities to the technology center of PUC (Catholic University), in Porto Alegre, and

its task is to prepare programs to be used by Dell itself to improve its relations with clients and suppliers, through gains in productivity. This involves a major educational tool that could have a multiplying effect on the Brazilian software industry. The plant, in Rio Grande do Sul, is also a platform for exports to Latin America. Shipments of equipment, chiefly to Chile, Colombia and Argentina, should generate some \$10 million in 2002.

The Souza Cruz tobacco company also opted for the State of Rio Grande do Sul to build their new cigarette factory. This involved an investment of R\$500 million. The industrial plant is being installed in the municipality of Cachoeirinha that offered extra incentives on top of those already offered by the State government, and it will be inaugurated in the second half of this year. This is a strategic location because the company will be able to service the needs of the southern part of the country. Apart from this, the raw material inputs are cultivated by tobacco farmers located within a hundred kilometer radius of the factory who will work in an integrated system. This means that they receive seeds and assistance from Souza Cruz itself. The State of Rio Grande do Sul, apart from being the largest national producer of tobacco, is also the largest exporter.

More recently, Rio Grande do Sul has also proved to be a proficient exporter of capital. About 40 local companies, most of them from



Ford's assembly line in Camaçari, in Bahia, where it produces the new Fiesta, the model responsible for the recovery of the company's shares in Brazil.

FERNANDO LEVI

A large, three-dimensional blue Dell logo is mounted on the white facade of a modern building. The logo is positioned above a large, dark-framed window. The building has a clean, minimalist design with white walls and dark window frames. In the foreground, there are several trees with yellow-green foliage and a small garden bed with pink and red flowers. A person is visible near the entrance of the building, partially obscured by the trees.

Dell Computers opted for Rio Grande do Sul and produces desktops, notebooks and servers. It is a platform for exports to Latin America

the shoe sector, have opened factories in other parts of the country in search of advantages such as an abundant workforce, and new sources of raw materials. The majority of these businesses set up operations in the Northeast of the country in the States of Bahia, Ceara, Paraíba, Pernambuco and Sergipe. Shoe factories started to appear in the semi-arid hinterland less than ten years ago in what can be interpreted as a discreet change of policy, something typical of the Brazilian shoe industry. Grendene was one of the first companies to make the cross-country move from the South to the North when it installed a factory in the State of Ceara. Today the company has nine production units in this State and these have become the basis for exports to more than 60 countries worldwide.

As a result the State of Ceara has been changing its profile as an exporter. Traditional products of its economy such as cashew nuts, carnauba wax, lobster and shrimp are relinquishing their places at the top of the list and are being replaced by shoes. It is a fact that the production nucleus in the Northeast was responsible for 8.8% of Brazilian footwear exports in 2001 and for 20% of the 610-million pairs of shoes produced for the local market. The social impacts of these new industries are very positive. In the Cariri region poverty is diminishing due to the creation of 6 thousand direct jobs and another 4 thousand indirect ones that were brought to this area by six shoe manufacturers. The same type of social phenomenon can also be seen in the State of Sergipe where Azaléia, Brazil's largest manufacturer of women's shoes, built a factory that has already gone through several phases of expansion and in the State of Paraíba where the Samello company has built a unit that is exporting more than the parent plant located in the State of Sao Paulo. Dozens of new businesses supplying components and inputs have grown up around the shoe manufacturers and are generating extra income for the region.

The State of Bahia also staked its claim to a share in the shoe industry but in a way that was based on a wide-reaching and aggressive policy for recovering local industry. The nucleus

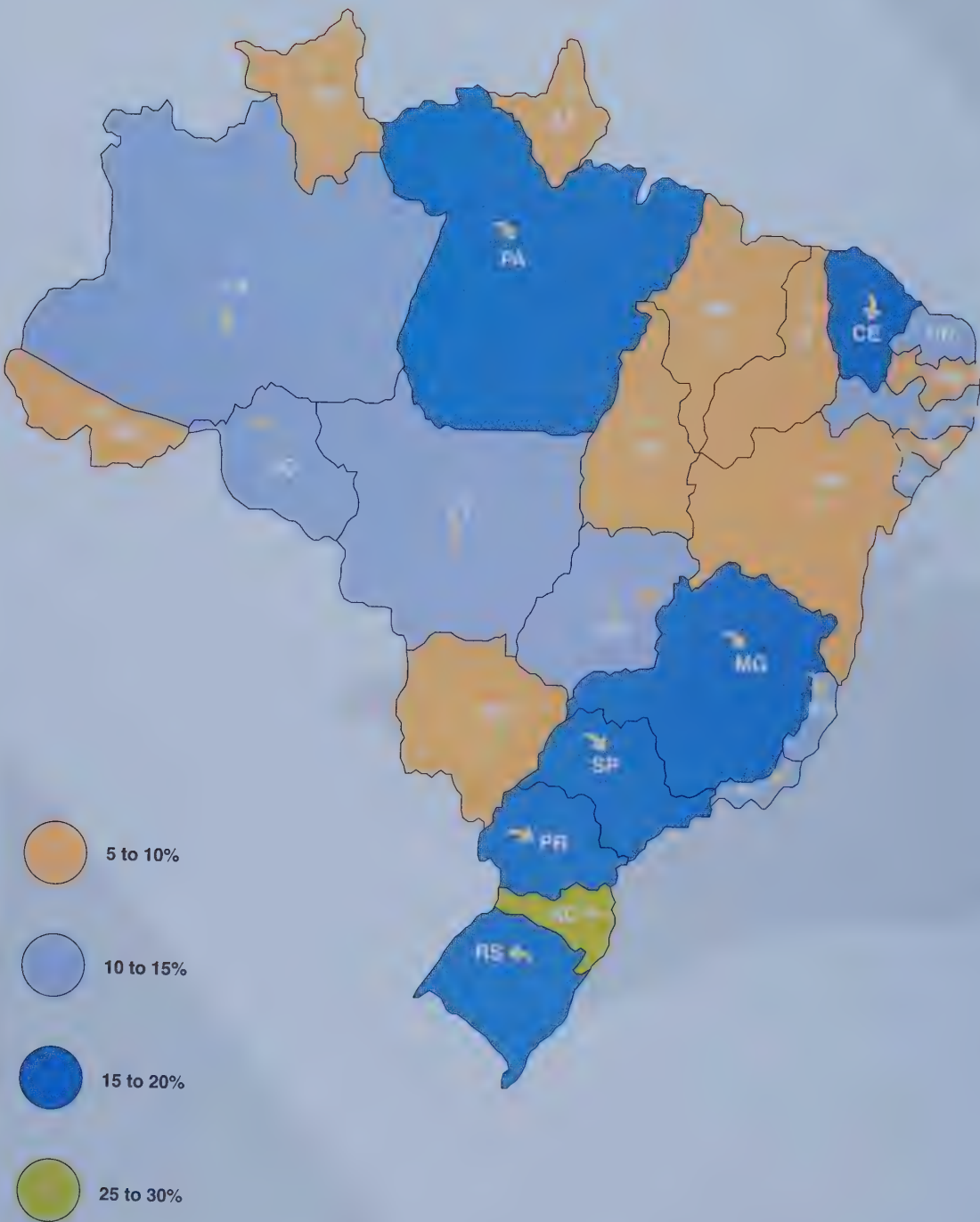
started to come together five years ago and already has six manufacturers in place - some, like Bibi and Ramarim, in their second or third stage of expansion - not forgetting more than eight producers of components and inputs. The investments came to more than \$250 million and have already created more than 11 thousand direct jobs. The State has been trying to grow its economy by attracting businesses from various different sectors. In Ilhéus, which is the traditional center of cocoa production, an important information technology cluster is getting off the ground and is currently home to 43 companies that are generating more than R\$420 million per year from sales of computers, parts, components and equipment for cable T.V. The city has plans of becoming a Technical Cluster, as from 2003, and an integrated center for the generation of technology and value-added products. Both the public and private sectors, as well as the university and research centers, are united and lending their support to this project.

Economic strategy in the State of Bahia is also looking towards injecting money into the Camaçari industrial complex, a town with 160 thousand inhabitants. Since 1978 the town has been a base for petrochemical businesses as well as companies like Ford and Monsanto. New investments have caused chain reactions in the local economy, especially in commerce. ISS (tax on services) contributions increased by 40% in the first half of 2002 and there are two shopping malls under construction, one in the town center and the other on the Coconut Road (Estrada do Coco), that circumvents Camaçari's seafront and where new executives moving to the city prefer to live. Along this strip of coast we find an increasing number of condominiums, residential buildings, and high quality homes.

This cycle of expansion in the city is, however, far from petering out. There are "great expectations" regarding the impending installation of Braskem, Brazil's largest petrochemical group, that, last August, took over the assets of the Oderbrecht and Mariani consortiums which include the raw material center

INDUSTRY.....

D. DEFANTI



Source: IBGE

of the Camaçari complex, apart from Copene, and a 29% participation in the raw material center at Triunfo (in the State of Rio Grande do Sul), as well as other second generation companies such as OPP, Trikem and Nitrocarbone. The conglomerate is responsible for 34% of the country's production of basic petrochemical products, 31% of polyethylene, 39% of polypropylene and 51% of PVC and also exports its products to about 40 different countries.

In the other corner of the ring with the newly created giant are companies like Suzano and Unipar who are partners in the centralization of raw materials in the South Eastern region of the country, as well as Petroquímica Uniao, in Sao Paulo, and the Polimeros company in Rio de Janeiro that is building a gas-chemical complex in that State. These companies have started to unite forces and are presently trying to entice Petrobrás to take a larger participation in their respective businesses. Braskem also has plans to strengthen its relationship with the State petroleum company. What this really means is the drawing up of a new game plan for the Brazilian petrochemical industry. The business prospered in the seventies based on a tri-party model proposed, at that time, by a Government that was responsible for both the logistics and the investments. In this model each project counted with three equal partners; the State, by way of its holding company Petroquisa, another local private company or conglomerate and, finally a foreign partner that would be the strategic and logistical ally. Foreign capital and the government have greatly reduced their involvement in this sector that, today, is basically controlled by large local companies.

In play are specific interests and participation in a market that is currently producing 1.7 million tons of polyethylene (this quantity could grow to 2.8 million tons by the year 2005), 835 thousand tons of polypropylene and 534 thousand tons of PVC. The creation of Braskem and the subsequent restructuring of the Brazilian petrochemical industry open the doors for a new round of potential investments in this sector that will be looking principally towards overseas markets.

This is exactly what the already effervescent town of Camaçari is hoping for.

In the State of Minas Gerais, we do not encounter the same level of euphoria but, in a more discreet way, industrial clusters are definitely emerging. The State can be considered as precocious, in terms of its development if compared to other regions of Brazil, basically because of mining that is still one of the corner stones of its economy. Afterwards, this abundance of raw material attracted a large steel complex and in the seventies we saw the Fiat automobile company set up their operations near to the state capital Belo Horizonte, a fact that gave a large impulse to the local industrialization process. More recently, however, the State of Minas has sought to stimulate its development based on the model of clusters or nuclei of companies working in the same markets. This can be seen clearly in the electro-electronic and biotechnology sectors.

The electro-electronic industry grew up in the south of the state in cities such as Santa Rita do Sapucaí and Itajuba. This cluster amounts to 107 different companies and, in September of 2002, received a new neighbor - the Taiwan giant, First International Computer (FIC). This company transferred its Sao Paulo unit to the region and expanded its production line with investments of \$20 million. The company manufactures hardware and portable computers. According to the BID (International Development Bank) the biotechnology industry in Minas is also making great strides towards consolidating itself as the principal nucleus of this revolutionary technology in all of Latin America. With clusters already established in the metropolitan region of Belo Horizonte, in Juiz de Fora, Montes Claros, and the Minas Triangle (in the towns of Uberaba and Uberlândia), this sector comprises, just in Minas Gerais, more than 750 companies, of which 120 are located in the metropolitan region of Belo Horizonte.

In 1999 the Belo Horizonte cluster generated revenues of-and not counting the health sector-a little over \$154 million and the following year made \$227 million, apart from creating 5 thousand direct and indirect jobs. A

study carried out by the Labor Unions of the Companies involved in Biotechnology (Sindbio) proved that the impact of this sector is far stronger than was imagined. Just in cattle raising, a sector that requires the genetic improvement of the animals through artificial insemination and the transfer of embryos, and also involves animal health and nutrition, the sector has 548 registered companies that are the source of more than 11 thousand jobs. The seed and seedling sector, that relies upon genetic engineering, numbers 75 companies and revenues of R\$400 million per year whilst, at the same time, it provides 4 thousand jobs.

Further information from Sinbio states that biotechnology already represents 7% of all agricultural business and 1.5% of the food production chain apart from generating exports that represent over one third of its production.

The agricultural industry has changed its focus in the Midwest, especially in the State of Goiás. This State has become an important base for the production of canned goods and recently became home to Perdigão that has started a project in Rio Verde that will require total investments of R\$550 million. The company's complex will comprise facilities for the slaughter of poultry and swine, as well as the production of processed meat and breaded meat. Part of the plant's production, principally frozen chicken and pork, is

exported to Russia, Asia, and the European Community. Whilst it was gradually expanding its installed capacity, the company was taking on more workers from the local community and is now hiring people from nearby towns.

The map of the economy is being redesigned even in regions that have fixed traditional and industrial profiles. The economy of Santa Catarina, for example, is going through a transformation. In the town of Chapecó workers are exchanging the fields and refrigeration plants for the furniture business or the machinery and equipment industries. And, in the Itajai Valley near the town of Joinville, a region known for its tradition in textiles and mechanical industries, there are centers of information technology springing up that are competing in the local market and also exporting software.

The tendency towards diversification is a new factor in a state that has always been known for its regional specialization. The sector leaders of each region continue to dictate the economy but other alternatives for generating wealth and investments are appearing. In Criciúma, the suppliers of paints and pigments for the ceramic industry have diversified their businesses by creating a chemical and plastic complex where the added value, measured through the amount of taxes being paid, has multiplied four times since 1994. In the Western part of the State the

agricultural machinery industry has improved the quality of its workforce and processes in an attempt to win foreign markets and, at the same time, more than 400 furniture factories have sprung up in the region.

The Itajai Valley is changing as well. The region, that was always singled out as a part of Brazil on the right track due to the success of its economical and social organization, went through stormy times in the nineties. The new economic freedom in the country and the import of cheap textiles, principally from Asia, caused a lot of damage to local



Blumenau, on the edge of the Itajai river, developed alternatives for the generation of income to overcome times of economical recession.

The participation of industry.....

In Brazilian exports

D. DEFRANTI

	Industrialized Products (US\$ FOB)	Participation of industry (%)	Raw Products (US\$ FOB)	Raw Products Participation (US\$ FOB)	Total of Exports (US\$ FOB)
2001	41,144,097,074	70.67	15,342,060,734	26.35	58,222,641,895
2000	41,027,006,680	74.48	12,561,835,135	22.80	55,085,595,326
1995	34,713,383,706	74.64	10,968,630,755	23.59	46,506,282,414
1994	31,851,583,034	73.15	11,058,359,236	25.40	43,545,162,212
1990	22,095,815,260	70.39	8,784,049,766	27.87	31,390,429,482
1989	24,220,722,310	71.47	9,548,482,693	27.77	34,382,619,710

Source: Secex

manufacturers and increased unemployment. A lot of employees who left the big textile companies set up their own businesses without abandoning the sector. They became small business owners and suppliers of services to the large companies, thereby helping to restructure the sector.

The textile industry is slowly recovering its competitiveness. Small and medium-sized businesses are flourishing and there is a growing concern about adding design to the products to consolidate the region as a reference point for fashion.

At the same time part of the specialized workforce who, on leaving college, were not absorbed by industry turned towards information technology. In 1992, Blusoft was founded in an attempt to create economic alternatives in the town of Blumenau. Since then, 500 companies involved with new technologies have been formed and this cluster is growing at a rate of 20% per year. These sort of cases demonstrate not only the phenomenon of the decentralization of industry and investment in the country but they are also creating the basis for a bolder approach in terms of international trade. The transformations in the national economy over the past few years have made the production conglomerate more effective and competitive whilst the approach and regularity of dealing with international clients has become much more professional. These two factors, when combined, present a scenario in which Brazil is ready to conquer new and important participations in world trade.

The roster of Brazilian exports is a reflection

of the breadth and sophistication of the country's production capacity. Basic products, (mainly commodities), represent 26% of total exports whilst semi-manufactured goods weigh in with 14% and manufactured goods with 56% (the part missing to make up 100% belongs to re-exports and other items). In 2001, exports came to \$58.2 billion and the item that weighed most on the balance was iron ore (\$2.93 billion, or 5% of all exports). Next came airplanes (\$2.8 billion or 4.8% of the total), soybean (\$2.72 billion or 4.68%), soybean meal (\$2.06 billion or 3.55%), and these are followed by automobiles, (\$1.95 billion or 3.35%), telecommunication transmission and reception devices, (\$1.76 billion or 3.03%), and shoes (\$1.68 billion or 2.89%).

These exports reveal a country with economically viable mineral reserves, an agricultural production that is recognized for its competitiveness and a diversification in terms of industry. And it is exactly in industry where Brazil's greatest opportunities lie for expanding its participation in world trade. Trade in basic products and semi-manufactured products is mostly concentrated in commodities, and their derivatives, where there is not much margin for adding value.

The roster of manufactured products comprises hundreds of different items with differing levels of aggregated complexity and technology. Diversity and innovation is, in this case, the key to expanding Brazilian business in a global world.



The Managed debts

Normandia and Solidao. It sounds like the title of a poem inspired by the mists of the French province located on the coast of the English Channel. It is only a coincidence. These two names appear together because they were the two Brazilian districts where the Caixa Economica Federal first installed "electronic correspondents"; computer terminals to enable the inhabitants of municipalities that lacked banking services to open accounts, make deposits, withdraw cash and receive their Social Insurance benefits by using electronic cards.

Normandia (6,822 inhabitants), located in the state of Tocantins, some 185 km from the state capital Boa Vista, was founded by two Frenchmen, Henri Charriere and Maurice Habert, fugitives from the infamous prison camp of Devil's Island in the French Guyanas. Charriere, known in the Paris underworld as Papillion, followed his destiny in life and became the author of an international best seller in the seventies which resulted in the box office success starred by Steve McQueen. Habert decided to stick around, married a Brazilian girl, left descendents in the area and today lends his name to the main avenue of Normandia. The "branch" of Caixa in the city is located at Gilson's Bar.

Solidao—which means solitude in English—(6,236 inhabitants) is located in the valley of the Pajeu, a seasonal river in Pernambuco, 403 kilometers from Recife. It used to belong to the district of Afogados de Ingazeira. When it was emancipated, in 1963, new names were suggested for the town however its inhabitants preferred to keep the traditional one, so suitable to the wistfulness of that faraway piece of hinterland. The terminal of the Caixa in Solidao is installed at the Dois Irmaos Bakery.

Determined efforts are being made by public and private Brazilian financial institutions to add the huge potential clientele not served by the banking network to their portfolios. It is estimated that 45 million Brazilian adults (26% of the population) do not have access to banking networks. This is especially surprising since currently Brazil possesses one of the most modern banking systems in the world. However, in the same way as things transpired in this year's October elections, when 95 million Brazilian citizens voted by using electronic ballot boxes that, in turn, released the results in a question of hours, the Brazilian banking system has adopted the most technologically advanced tools to reach the mass of the population.

The system that Caixa Economica Federal is installing in small commercial establishments in the interior required investments in the order of R\$6.3 million for the implementation and acquisition of 2,445 electronic terminals that transmit data via satellite to a computerized

center in Brasilia where the accounting records are processed. Caixa's service agent receives a remuneration of R\$0.20 per transaction carried out or a minimum of R\$150 per month. However it is not the remuneration for the service that attracts Caixa and the retailers. It is the prospect of adding new customers to their portfolios. Caixa's service network also includes hundreds of lottery stores spread throughout Brazil.

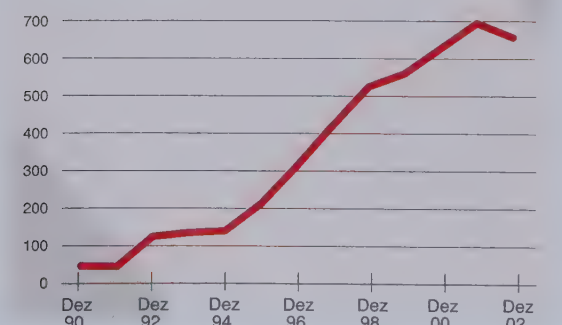
It is a fact that the number of traditional bank branches is increasing in a much smaller proportion than the number of Automated Teller Machines, or ATMs, and banking services. The number of existing branches in the country, which was about 16,590 in 2000, increased to 16,847 in 2001, a mere 1.55% growth. In the same period, the number of service points (including the electronic ones, and those of direct transactions and rural credit) increased from 14,488 to 25,196, that, according to the Brazilian Federation of Bank Associations (Febraban), represents a 73% expansion.

This growth contributed a great deal to reducing the huge lines in banks that, until a short time ago, were a nightmare for Brazilian bank customers. Although still limited to the high-income tier, the use of the Internet in banking services has been growing continuously. In 2001, based on the latest data from Febraban, 19.8 million Internet bank transactions were carried out in Brazil. The customers' favorite means were the ATMs, which were responsible for 59.24% of the total. Personal service came in second place, with 36.21%. The Internet share was only 4.15% of the total, although its frequency in banking operations showed a significant increase of 121.9% compared to the previous year. On the other hand, while the number of cashed checks dropped (1.4% in 2001 compared to the previous year), the use of credit cards increased, (2.3% in the same period).

Bradesco, the largest private Brazilian bank, won a public tender at the end of 2001 for the implementation of the Postal Bank in partnership with Empresa Brasileira de Correios e Telegrafos (Brazilian Post Office) - EBCT, hoping to repeat, in Brazil, the success that banking activities through the post offices have had in Japan,

Federal Debt

Balances refer to ends of periods (in R\$ billions)*



Source: Central Bank, FGV and Gazeta Mercantil Information Center.

* Monetary correction to values for Sep./2002

France, Holland, Portugal and other countries. In March this year Bradesco started its project for installing 5,320 Postal Bank branches with 36 experimental units that, until January, were operated by Banco do Brasil. The target public for these branches is made up of employees of local companies, public employees, senior citizens, and those benefited by scholarships or minimum-income programs. The service is supplied by the Post Office employees themselves who make a commission on each operation (withdrawal or deposit or the forwarding of loan requests).

Initially the problem was making Bradesco's data processing system compatible with that of EBCT. After this obstacle was overcome the project has been progressing at full speed. According to Bradesco's data, by June 2002 the bank had opened 1,000 Postal Bank branches of which 735 are in locations where there were no banking facilities. This resulted in an influx of 100 thousand customers who made 155 thousand deposits totaling R\$76 million. Bradesco hopes that, in the second half of this year, it will have installed another 2,000 postal branches that could capture 3,5 million new customers for the bank.

The bank's initial cost is estimated at R\$200 million for a total of 5,299 Postal Bank branches. Obviously, one of the main purposes is to reduce the costs for opening new Bradesco branches and identify new clients in unexploited areas, some of whom have quite high purchasing power, as well as compiling data on potential markets. It has already been proved that the existence of a bank in small communities strengthens the local economy and avoids draining resources to larger cities.

A good example is Sao Francisco de Paula (6,533 inhabitants) in the Midwest region of Minas Gerais, 160 km from Belo Horizonte. There were no banks this town and the people who live there were forced to carry out their banking operations in a larger neighboring city - Oliveira (37,250 inhabitants), located 20 km from Sao Francisco de Paula. Its mayor, Altair Junior da Silva, says that people from his town had to

travel to Oliveira to withdraw cash and ended up by going shopping there. The owners of the drugstore and the grocery store were forced to send an employee everyday to the neighboring city to deposit the previous day's earnings. Apart from the inconvenience there was always the risk of being robbed. On the other hand, retired employees, who make up one of the main sources of income in some towns in the interior, had to go to the larger city to be able to receive their pension payments. Some of them, (people from Minas Gerais are famous for being thrifty), would deposit a part of their cash in savings accounts in Oliveira. Whatever was left



Aerial view of "Cidade de Deus", in Sao Paulo, where Amador Aguiar edified the headquarters of Brazil's largest private bank - Bradesco.

over was kept under their mattresses or under lock and key to be used for daily expenses. Now, they can do all this at the Postal Bank in the small town where they live.

In a deeper sense, this represents a form of redemption for the backwardness of the last century. One of the greatest obstacles to the development of Brazil, especially in the 20th century, was the lack of banks and channels for financial intermediation. The first step towards the solution to that deficiency was the founding of the Banco do Brasil by D. Joao VI, in 1808, the same year that the monarch arrived in the country. Although it was successful to a certain degree it did not last long. With the return of the royal family to Portugal, in 1821, the assets

of Banco do Brasil were confiscated by the king and the members of his court who took possession of gold bars, diamonds and ivory deposited in the bank's vaults. D. Joao VI alone took 60 million cruzados in gold bars and gold coins. Condemned to bankruptcy and only resuscitated in 1851 by Irineu Evangelista de Sousa, who later became the Baron and Viscount of Maua, the collapse of the first Banco do Brasil frustrated what could have been the core element for the development of capitalism in a Brazil that became independent after 1822.

The underlying reason for the transfer of the royal family from Portugal to Brazil was not exactly the opening of the ports, first to the English and then to the rest of the European world, the so-called friendly nations. This would have been inevitable, whether D. Joao VI had come to Brazil, or not. The most relevant fact was to create a monetary basis for an economy where scandals predominated, contraband was commonplace and where instead of public agreements there were personal relationships concentrated in a reactionary colonial power.

The great opportunity that Independence could have meant for the country to progress to

a capitalist stage ended up by strengthening the old slavery scheme, since the governments did not pursue the creation of tools to circulate wealth in a country with a reasonably vigorous economy. In "The mercantile society" Jorge Caldeira explains, in a very convincing manner the reason why internal factors were more decisive than external ones in determining Brazil's economical backwardness during a good part of the 19th century. He wrote, "After the Court arrived conditions and alternatives arose to overcome the focal point of backwardness in Brazilian society: restraints on using the wealth of the country in the public sphere and the stagnation as far as private assets were concerned". It was vital to deal with the pressure of being backward. As to the traffic of black people from Africa, for example, the lack of control over the rhythm of change was already evident. In the first decade of the 20th century, the opportunities lay in developing the process of creating financial tools that would release the fortunes concentrated private hands to be used as working capital in the public sphere. However, it was a process dominated by smugglers; in order to expand it would be necessary for many local traders to

follow suit - which, given the structure of the economy, could only happen based on the merchandise that dictated its rhythm: the slave."

Things were changing but the process was abruptly interrupted. To complicate things even more the new Brazilian emperor was dominated by a fixation: that of maintaining his right to his inheritance under the Portuguese monarchy. In 1825, Dom. Pedro I (who would become Pedro IV in Portugal), abruptly disauthorized negotiations that were underway with the British government initiated by prime minister, José Bonifacio de Andrada e Silva. In order to further his own ambitions Dom Pedro concluded a private treaty with England that was to



The Brazilian Central Bank building in Brasilia combining concrete, glass and air conditioning.

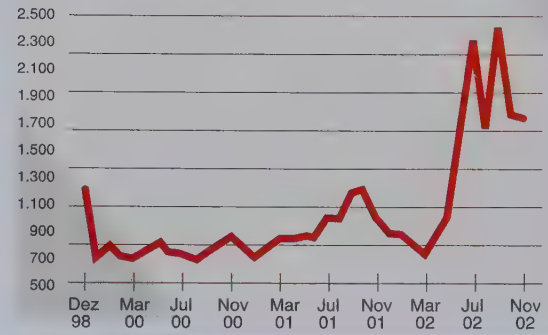
become the ruin of Brazil. Further to banning the slave traffic, Brazil was prohibited to increase customs duties and ended up by owing an indemnity to the ex-metropolis for the expenses incurred in the struggle for the independence of the colony.

The large traders in Rio who, instigated by D. Joao VI and against their better judgment, subscribed as minority shareholders to the capital of Banco do Brasil in 1808 had been clamoring for compensation from the government of the Empire but the coffers of the bank had already been emptied. They managed to receive dividends on non-existing profits but they were never reimbursed for their quotas of the capital. This pressure however was a useful pretext for the funding loan granted to D. Pedro by British bankers. This was how the first brick was laid in the history of Brazil's external debt. The money was never used to capitalize the bank. In fact, it was nothing more than the renewal of a loan of two million pounds made by the Portuguese government to fight for the independence of Brazil. This shrewd rolling of the debt was a part of a political arrangement that ensured D. Pedro the right of succession to the Portuguese crown.

The liquidation of Banco do Brasil, during the regency of father Diogo Antonio Feijo, in 1835, was an unavoidable measure in view of the unsustainable situation that was imposed on that institution. It was issuing bonds by the buckets-full without back-up assets to finance the government that included its military adventures in the basin of river Prata. However, nothing was done in the short term to meet the needs for credit. Brazil's financing capacity remained dependent on slave traders/smugglers. After 66 years of Independence at the time of the overdue ban on slavery, in 1888, Brazil had only 26 banks, all of them small in size, and containing a total capital of 145 thousand "contos de réis". One half of the deposits of these banks came from Rio de Janeiro. Of the 20 provinces and one neutral municipality (20 states and one federal district after the proclamation of the republic in 1889), seven did not have a bank.

Brazil Risk

(EMBI+ - in points)



Source: J. P. Morgan and Gazeta Mercantil Information Center

The creation of a true banking system in Brazil was ultimately left to the 20th century. Banco do Brasil underwent comprehensive restructuring in 1904 and, in the subsequent decades several new banks appeared in Brazil, including the first foreign banks, but these faced serious problems with a galloping inflation combined with a lack of adequate regulations on the part of the public sector.

Today, after a vast improvement in the system, the greatest challenges lie in not just overcoming geographical distances but social ones as well, a problem that the banks have been trying to solve through automation. The electronic services possess a number of tools to meet this objective but bank managers have already realized where the branches are losing out. Automation makes it difficult, and sometimes impossible, to forge a closer relationship with the client. The lack of contact between the bank employee and the customer can often be an obstacle for furthering business operations. For this reason, the banks now seek new centers for customer relations that can currently be found in public places such as grocery shops, department stores and shopping malls.

Banco do Brasil discovered this opportunity and in an attempt to expand its network, it signed agreements with the Sendas supermarket chain, in Rio de Janeiro, and with the Barateiro network, of the Pao de Acucar group, in Sao Paulo. With this strategy BB conquered 3,700 new service points at the "check-outs" of the agent's network. The initiative has proved so successful that Group Sendas is planning to sell

shares of its company on terminals installed amongst its regular shelves. The project is only waiting for the offer of the shares, an event that should take place in 2003. The BB strategy for 2002 foresees an extension of its network of correspondents to grocery stores in Pernambuco and Maranhao.

For its part, Magazine Luiza, a chain of department stores with affiliated companies in the interior of Sao Paulo, Minas Gerais, Parana and Mato Grosso do Sul concluded a joint venture with Unibanco in 2001 that resulted in the creation of LuizaCred, a financing company in which the retail chain has a 50% share.



The floor at the Sao Paulo Commodities and Futures Exchange, a conglomeration of investors and speculators as in any other stock exchange.

LuizaCred does not just grant financing to its customers. The difference between LuizaCred and other finance institutions is that, in some stores, it offers personal loans through a service that is open to the general public. The chain also has a partnership with the insurance company Vera Cruz and launched, in September of 2002, a type of insurance for the unemployed as a way to reduce default. The insurance covers installments above R\$200, at a cost of R\$9.80.

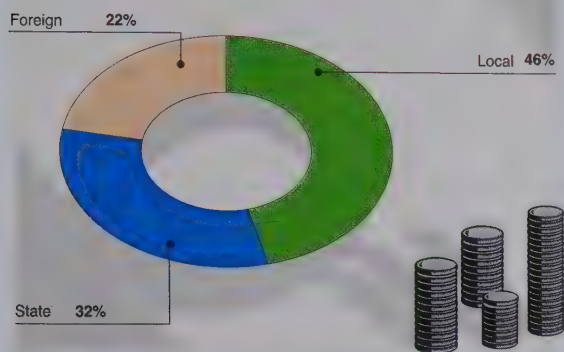
Banking automation advances in another direction; means are being created for the immediate transfer of amounts from one bank

to another on the same day, a kind of service that has no equivalent even in the most developed countries. In May this year the Brazilian Payment System (SPB) was implanted for the direct transfer of large amounts from one account to another and from one bank to another on the same day, without the client having to wait for compensation or processing time. This is carried out safely by way of Available Electronic Transfer (TED) which required the development of a data communication network, compensation centers and the adaptation of thousands of programs to enable integration in one sole system. Solving the problems that emerged in the 181 commercial

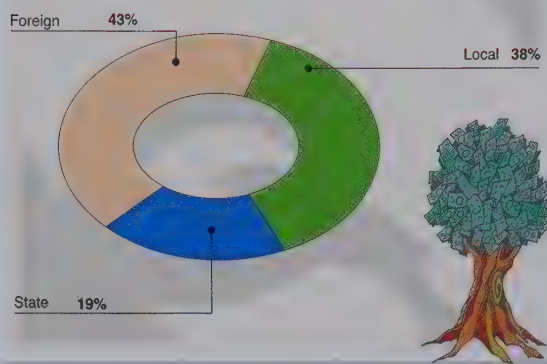
banks existing in Brazil was not an easy task. The Central Bank, that monitors and participates in the SPB by way of the Reserves Transfer System (STR), had to put up with successive delays.

When the SPB effectively started it processed transfers totaling R\$1 million or more, an amount that was gradually reduced. In July this year the limit had been lowered to R\$50 thousand and soon after to R\$5 thousand. The TED became really popular when the minimum amount was established at R\$5 thousand in June this year. The daily number of online operations exceeded an average of 20 thousand in September.

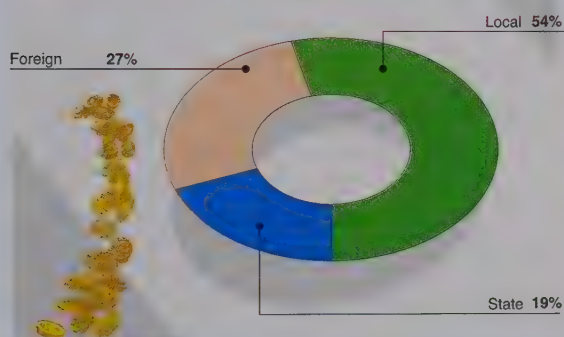
This figure is equivalent to 15% of the volume of operations in excess of R\$5 thousand compensated everyday. The transfers by way of Credit Documents (DOC), subject to the general compensation of checks, are still far higher, even at the R\$5 thousand level. However, it is expected that the migration from DOC to TED will increase a great deal as the minimum amount for the transfer in real time is reduced. This is the second phase of the SPB and it is anticipated to be concluded by 2005. It is being called SPB-2. The forecasts are that, at this point, people will be able to transfer any amounts in real time to any bank anywhere in Brazil's huge territory.

Credit Transactions

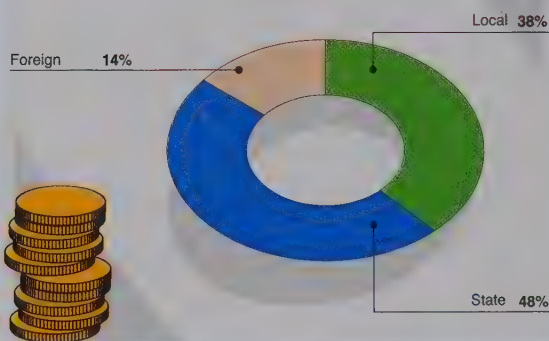
Source: Gazeta Mercantil Information Center

Net profit

Source: Gazeta Mercantil Information Center

Total Deposits

Source: Gazeta Mercantil Information Center

Net assets

Source: Gazeta Mercantil Information Center

Technicians at the Central Bank say that before banking automation was widely disseminated in Brazil people felt as if they were the customers of bank branches. With the technological advances, the interconnection of the service points of one institution and the Internet, people became clients of banks and no longer branches. In the future a bank's customer will become the client of the financial system. In a not so faraway future the clients of Bradesco, or Banco do Brasil, for example, will be able to withdraw cash or print out a bank statement on the ATM of a competitor, be it Itau, Unibanco, Santander, Citibank etc. The Central Bank did not oblige the Brazilian banks to use the TED, allowing them to maintain the DOC system even for operations in amounts equal to, or higher than, R\$5 thousand. What the monetary authority has been doing is encouraging the adoption of this

state of the art system. Within this new framework, as from November this year a higher tariff started to be charged on checks and DOCs in excess of R\$5 thousand.

The SPB also leads to the modernization of other services associated with the financial system. Together with the Reserve Transfer System (STR), the Brazilian Central Bank has already remodeled the Special Liquidation and Custody of Public Bonds System (Selic), that is already in operation, as well as the Center for the Custody and Financial Liquidation of Bonds (Cetip), the clearing house for exchange and derivatives of the Futures & Commodities Exchange (BM&F) and Companhia Brasileira de Liquidacao e Custodia (CBLC), acquired by BM&F and responsible for operations with shares and bonds in the Sao Paulo Stock Exchange (Bovespa). The operations carried out through these clearing houses are not subject to monetary limits.



ABN AMRO, that maintained the original name of the Banco Real associated with its own name, in the heart of the Sao Paulo financial district.

As can be seen, the Brazilian Payment System is closely connected to business carried out in Brazilian stock and commodity exchanges that in turn have also undergone a constant process of modernization. The stock exchange in Rio De Janeiro (BVRJ), founded by emperor Dom Pedro II in 1845, is the oldest institution of its kind in Brazil. Since then it has held a central role in some of the most important events relating to the country's financial history starting with the economic depression that followed the proclamation of the Republic in 1889 to the extensive privatization process that has been taking place since 1991. Over the past few years the Rio Bourse has specialized in the negotiation of diverse public papers issued by federal, state and municipal governments, it developed and implanted a number of projects amongst which, and worthy of note, was one of the most up to date systems of business technology: the Sisbex - an electronic market

for public papers that, is being operated today by the Commodities and Futures Exchange

Almost as old as its counterpart, the Sao Paulo Stock Exchange dates from the dawn of the Republic, and was founded in 1890. Today it is the principal center for the negotiation of papers and securities issued by, or under the co-responsibility of, publicly traded corporations that are registered in the CVM, an entity that fulfills the same role in Brazil as the Securities Commission in the United States. The Ibovespa, the Bovespa Index, reflects the variations in the Brazilian stock market. At Bovespa, apart from business in stocks, it is common to witness negotiations for subscription rights and receipts, subscription bonuses, quotas for investment funds, future contracts for options, debentures and commercial papers etc. In 1996/1997 the Paulista Bourse compounded daily trades of R\$1 billion. At the present time, and mainly due to the recession, daily trading is around R\$500 million per session.

30 years ago Bovespa was the first Brazilian Bourse to automate the stock exchange floor with the release of information on-line and in real time. Since then it has worked hard to stay technologically updated and one of the results was the launching of the "home broker" system in 1999. The aim was to popularize investments in the stock market through the Internet by allowing the investor to transmit his purchase order directly to the Bovespa Business System. Another Bovespa innovation is the "after market", a pioneer system all over the world that permits a nocturnal session of electronic business.

The Commodities Exchanges have also evolved considerably. In 1917, when coffee was still the main source of the country's income, exporters, traders and rural producers founded the Sao Paulo Commodities Exchange (BMSP) that traded basically in coffee, fattened cattle and cotton. A large leap forward was taken in 1985 with the appearance of the Commodities and Futures Exchange, which amalgamated its operations with those of the BMSP six years later. Recently the BM&F redesigned its prin-

cial agricultural contracts in an attempt to grow a larger amount of business and attract foreign investors and trading companies in the same way that was already happening with coffee. Today, and apart from coffee, the Bourse negotiates contracts for fattened cattle, sugar, alcohol, and corn and has reinstated future contracts for cotton and soybean.

Agricultural future contracts traded on the BM&F amounted to R\$2.909 billion between January and September of this year, a drop of 14% if compared to the same period last year. This drop in revenue can be explained by the low prices being obtained for coffee and sugar in international markets. The number of contracts traded, however, presented an increase of 3% and reached a total of 565.5 thousand. The BM&F also negotiates future contracts for exchange rates and derivatives, interest rates, gold, the Ibovespa and the General Market Price Index (IGP-M), one of the indicators used to monitor inflation.

With the expansion of production and exports in the Brazilian agricultural sector the BM&F and the Commodities Markets in the states of Goiás, Matto Grosso do Sul, Minas Gerais, Parana, Rio Grande do Sul and Uberlandia (MG) decided to band together and form the Brazilian Commodities Bourse (BBM) that constitutes a modern local market for commodities. Each one of these Exchanges was transformed into a Regional Center of Operations for the BBM and they have been operating in both the spot and future markets since October of this year. The BM&F collaborates by rendering services for compensation and liquidation to the BBM. The Brazilian Payment System is vital in this process of expanding business opportunities because it helps manage the flux of resources between the signatories of the contracts.

The decision by the federal government to structure the SPB, made in June of 1999, had, as its main objective, the challenge of bringing Brazil into line with the international standards of safety and transfer of values established by the Banco para Compensacoes Internacionais (Bank for International Settlements-BIS), headquartered in

Basilea (Switzerland). The start-up of this process caused the banks to spend over R\$1.7 billion in hardware, telecommunications, safety of information, solutions for the transmission of instructions and guidelines for reserve facilities that are responsible for promoting the exchange of data amongst the participants of the SPB and for the ongoing monitoring of the reserve accounts of each institution at the Central Bank in order to avoid negative balances. As the institutions cannot present negative balances overnight the Central Bank manipulates compulsory deposits that are sufficiently flexible to allow for the banks to meet their cash needs over the course of the day's trading.

All these advances in the Brazilian banking system were basically encouraged by two factors. First came a drop in inflation after the Real Plan launched in July of 1994. With the end of uncontrolled inflation and the arrival of relatively stable prices, the banks had to rationalize their operations to be able to maintain their profits. The second factor, also very important, was the decision by the government to open up the Brazilian financial system to foreign capital resulting in an increase in competitiveness. As a complementary measure, the reduction of the percentage of the compulsory payments on cash deposits, term deposits and balances in savings accounts payable to the Central Bank also needs to be mentioned. This led the banks to desperately seek deposits.

In fact, it can be said that there has been a revolution in the *modus operandi* of Brazilian banks since 1995. It is worth noting that of the 50 largest banks operating in Brazil in 1979, 27 went through changes arising from their liquidation by the Central Bank, transfer of control, or changes in status. Since 1975, and starting with the intervention in Banco Halles, the Brazilian banking system has been going through a continuous cleansing process. Up to 1995 the process consisted basically of intervention by the BC and extra judicial liquidation of banks found to be irregular.

The process became especially complicated with the arrival of financial conglomerates. The

Banking Reform Law of 1995 created a system of specialized institutions: commercial banks, investment banks that were intended to dedicate themselves to long-term financing, finance houses for supplying consumer credit, building societies, stock brokers and stock distributors. On many occasions insurance and leasing companies were also connected to the conglomerates that later became known as multiple banks, a factor that turned extra judicial liquidation into a long and arduous process.

An important change took place during Fernando Henrique Cardoso's government with the adoption, in 1995, of the Program to Stimulate the Restructuring of the National Finance System (Proer). This proposed the

separation of the healthy part of a bank and its affiliated institutions so it could then be sold to third parties. The unhealthy part that remained would then be liquidated by the BC. This process was completed when the Brazilian market was opened to foreign banks. The year after Proer was implemented it was time for the Program to Stimulate the Reduction of the State Public Sector in the Banking System, (Proes), that was specifically aimed at state commercial banks

It is necessary to explain that, prior to this, Brazil was not totally adverse to foreign capital in the banking system. Institutions such as Citibank, Bank Boston and Sudameris have been operating in the country for decades. But up until 1995 the foreign presence was limited by restrictions regarding the arrival of new institutions and obstacles for the expansion of branch networks etc. All this changed dramatically with Proer which was the instrument that allowed foreign institutions to participate in the tenders for the de-privatization of the banks. Apart from this fact, other overseas banks, attracted by the potential of the Brazilian market, could incorporate local banks, something that came to be seen as normal business procedure.

Over the last few years the merger and incorporation process has intensified, including the case of state institutions, with the objective of obtaining savings through scale and increasing the efficiency of the conglomerates to dispute a place in a market that is rapidly becoming more competitive with the participation of large foreign and local institutions. The nature of deposits in the banking system also went through changes. The customers started looking for a higher return on their deposits and, because of this, the participation of funds, investment portfolios and long-term deposits increased from 65.3% (in 1999) to 69.8% (in 2001) of the total capital captured by the banks. Cash deposits fell by 34.7% and deposits in savings accounts by 30.2% over the same period

A study of Brazil's 50 largest banks shows that 17 are controlled by foreign capital. The advance over the last decade has been fast and unrelenting.

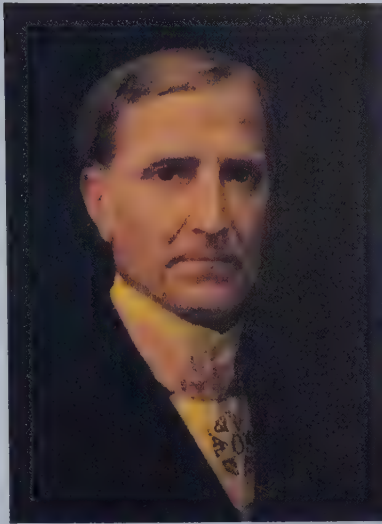


Avenida Paulista, in São Paulo, is Brazil's financial capital.

In 1979 the net assets of foreign banks amongst the 50 largest in Brazil did not exceed 1.72%. In June of this year this participation was 26.62%. A little over 20 years ago the branches of foreign banks captured only 6.04% of total deposits and carried out a mere 5.96% of credit transactions. Two decades later these participations have grown to 14.17% and 21.55% respectively. In terms of profits the foreign banks are way ahead of both the state banks and the local commercial banks. The net profits of banks headquartered outside of Brazil leapt from 4.13% in 1979 to 42.09% in June of this year.

One expressive example is Banespa, an old and traditional commercial bank in the state of Sao Paulo whose control was acquired by the Spanish bank Santander Central Hispanico (SCH), in 2000, for U\$7 billion the highest price paid to date in the bank privatization tenders. In the third quarter of this year Banespa had net profits of R\$1.082 billion, a record result for a Brazilian bank over a three-month period. In the accumulated amount for the year profits have reached R\$2.323 billion an increase of 404% compared to a similar period last year. Profitability is 71.1%.

Something that can be seen from studying the events in the sector over the last 20 years is that the private local banks have also advanced but at a slower rate. Their assets, that corresponded to 35.42% of the total of the 50 largest, have risen to 54.56%. But the share of total deposits has fallen from 52.53% to 38.16%. In terms of credit transactions they went from 35.12% to 46.48%. It was the state institutions that substantially reduced their market share. In 1979, 17 of the 50 largest commercial banks were state owned. A study carried out by Gazeta Mercantil's Information Center shows that, today, there are only 8 banks in this category that are still state controlled. Of these 4 are federal institutions, namely Bank of Brazil, Caixa Economica Fede-



Irineu Evangelista de Souza, o Barão de Mauá, (the Baron of Mauá), was Brazil's first banker.

ral, Bank of the Northeast of Brazil and the Bank of Amazonas. The others are controlled by state governments and are: Banco Nossa Caixa (SP), Banrisul (RS) and the Bank of Brazilia. The Bank of the State of Santa Catarina is also on the list but is about to undergo a privatization process.

It is likely that the country will find itself with only five commercial state banks, unless the governors elected in the recent October elections opt for a different course of action. These are namely: Nossa Caixa, Banrisul, the BRB, The Bank of the State of Sergipe and the Bank of the State of Para (Banpara). The corrective surgery performed in this area has been far-reaching and profound. In 1979 there were 26 of these banks operating that, thanks to the inflation of the period, were even lucrative although the majority were not operating in accordance with the higher principles of banking procedures. Much used for political ends these banks were famous for loans made "on the buddy basis" without adequate guarantees, and for the financing of projects of dubious feasibility and other irregularities. Of the 26 banks operating 20 years ago 17 have been privatized and 5 are going through the privatization process.

Both Proer and Proes suffered severe criticism on the basis that the government was spending huge amounts of money to bail out these banks that would have been better spent on social projects. These criticisms have lost a lot of ground over recent years and even the opposition has been forced to recognize that the Brazilian financial sector has been cured of most of its ills. Apart from this it should also be taken into consideration that, differently from the situation that arose in Argentina, Brazil's opening of its financial markets to foreign institutions did not lead to a denationalization of the system. Banks formed by local capital, both public and private, are

holding their own and are important sources of financing for the public debt.

There is another type of Brazilian state bank that does not act as a commercial bank but more as a fomenting agent. These banks do not capture cash deposits from the general public and their funding comes from budgetary allotments and loans obtained from multilateral institutions, as well as income earned from previous transactions or stock participation in a number of companies. The largest fomenting agent in Brazil is the Banco Nacional de Desenvolvimento Economico e Social (the National Bank for Economic and Social Development) - BNDES, that was created in 1952 by President Getulio Vargas as the BNDE (the "s" was added decades later), and is presently celebrating its fiftieth anniversary. The institution that, today, is the largest of its kind in the Americas was a pioneer in Brazil and instrumental for providing mid and long-term loans intended to fuel the economic development of the country. To this end it undertook to operate in the local market by adopting guidelines oriented by the World Bank with whom it has had an ongoing relationship since its inception.

In regards to long-term financing for development BNDES became one of the largest institutions in the world. Between January and June this year requests for financing forwarded to BNDES totaled R\$24.7 billion which represented an increase of 36% compared to

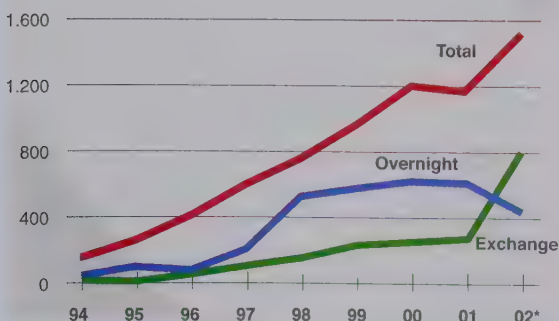
the first seven months of 2001. During this period the bank has disbursed R\$16.6 billion to industry, commerce and services, an increase of 40% compared to the first seven months of the previous year. It is expected that disbursements will reach R\$28 billion by the end of this year. Finance for the agricultural sector amounted to R\$2.4 billion, an increase of 41% aimed at supporting the increase in crop production. The bank has also become the corner stone for works in infrastructure, especially those in the electrical energy and telecommunications sectors.

The bank has also been extremely active through one of its sister companies, the BNDES-Exim, where its involvement has been decisive over the last few months when there was a marked drop in the availability of financing for Brazilian exports. Over the first six months of this year BNDES financing amounted to U\$1.8 billion (U\$2,6 billion all of last year). Faced with a scarcity of credit lines funds were re-directed towards pre-shipment financing or, in other words, the provision of funds for the production of exportable goods.

BNDES did not forget about social responsibilities and expects to invest R\$1.9 billion in this area, an amount that represents 1.9% of its overall budget. This includes investments in urban infrastructure, basic social services, modernizing of public management and maintenance of jobs in the workplace.

Another federal agency for fomentation is the Banco Regional de Desenvolvimento do Extremo Sul (the Regional Development Bank for the Deep South) - BRDE, that services the states of Santa Catarina, Parana and Rio Grande do Sul; There are five development banks under state control: BDMG (MG), Bandes (ES), BDRN (RN), Desenhahia (BA) and Badesc (SC) that have specialized themselves in providing credit to business projects that contribute to economic growth and finance social projects on a regional level. Sul Caixa (RS), that used to be a commercial bank, has also become a fomentation agent. Together with another 11 state fomentation agencies these institutions

Federal public papers (Balances at the end of the period)



Source: Central Bank and Gazeta Mercantil Information Center

* Balance in September

form what is known as the BNDES System and are responsible for passing through the resources for projects that have been analyzed on a state or regional level

All of these institutions need to comply with parameters established by the Central Bank in regards to solvency. The solidness of Brazilian banks can be seen in the indices drawn up in the Basel Agreements regarding Capital, elaborated under the auspices of the International Compensation Bank (BIS). One of the most important stipulations of these Agreements is that the assets of a bank pondered by the risk should correspond to, at least, 8% of its adjusted net worth. In the case of Brazil, considering foreseen and unforeseen risks, the Central Bank raised this factor to 11%.

The Brazilian state banks were the ones that encountered most difficulty in complying with these norms but an appraisal of the balance sheets for the second half of 2002 shows that they are all meeting their targets. In regards to private banks, both local and foreign, the total of assets pondered by the risk far exceeds the aforementioned 11% and in some cases 14%, 18% or even more than 20% can be seen.

It is true that, in recent months, international risk classification agencies such as Standard and Poors, Moodys and Fitch lowered the "ratings" of Brazilian banks, including some of the largest institutions. The justification is that these banks are over-exposed to public debt. Therefore if there were a default on the part of the Brazilian government these banks would be severely affected. There was a lot of speculation about this point during the presidential campaign but the elected president and his economic team have already made it unequivocally clear that restructuring of the internal debt is out of the question. This has impacted on the foreign markets where the "risk Brazil" has shown a downturn as measured by JP Morgan's Embi+ index.

There is a lot of exaggeration involved in these evaluations and Brazilian analysts, together with their better-informed international colleagues, are convinced that although the Brazilian internal debt is high it



Headquarters of HSBC, a historical building that was restored by its antecessors located in the central region of Curitiba, capital of the State of Parana.

can be managed. According to the latest data released by the Central Bank the debt in the Brazilian public sector including the three levels of government (Federal, State and Municipal), amounted to R\$658.7 billion at the end of September, being that R\$348.4 billion, or 52.9% of the total, are indexed to the Selic rate. In other words the market rate that is based on interest rates established by the Monetary Policy Committee of the Central Bank. Another R\$191.3 billion, corresponding to 29% of the total, are indexed to the exchange rate. Although a part of this debt varies in accordance with the quotation of the dollar the point is that it is paid in reais, the country's currency, and not in dollars and therefore has nothing to do with external solvency. This signifies that it is very doubtful that the government would be forced to declare an internal moratorium even in the extreme case that the banks declined to roll over the debts. Apart from this, in a floating exchange rate scenario the possibility that the banking system would refuse to roll over the internal debt is very remote to say the least. In reality the financial community has little choice but to maintain the system of rolling over the debt.

Proof of this was the roll-over at the end of October of U\$2 billion in exchange notes that were coming due. After the results of the second round of the presidential elections were known

THE 50 LARGEST BANKS IN THE FIRST HALF OF 2002

TYPE COMPANY HEADQUARTES			ORIGIN	DATE OF ASSETS	TOTAL ASSETS (R\$ thousands)	TOTAL DEPOSITS (R\$ thousands)	CREDIT TRANSACTIONS (R\$ thousands)	NET WORTH (R\$ thousands)	NET PROFIT (R\$ thousands)
1	Banco do Brasil	DF	State	06/02	174.731.466	81.354.387	44.957.286	7.984.494	823.122
2	CEF	DF	State	06/02	113.418.734	73.511.194	18.245.688	4.301.135	564.434
3	Bradesco	SP	Local	06/02	91.823.552	43.044.078	28.742.810	10.118.559	904.238
4	Itaú	SP	Local	06/02	75.901.113	27.894.355	18.887.115	9.246.736	996.122
5	Unibanco	SP	Local	06/02	55.764.898	20.658.733	18.182.030	6.261.879	475.180
6	Banco Real/ABN-AMRO Bank	SP	Foreign	06/02	36.791.368	12.528.227	11.830.647	5.196.636	393.952
7	Banespa	SP	Foreign	06/02	31.179.188	9.928.161	4.914.404	3.947.802	1.240.881
8	Santander Brasil	SP	Foreign	06/02	26.235.651	7.118.126	5.581.488	754.430	(167.180)
9	Nossa Caixa	SP	State	06/02	23.703.981	16.793.286	3.156.055	1.274.368	171.224
10	Safra	SP	Local	06/02	22.498.341	7.271.314	8.289.039	1.999.792	175.472
11	BankBoston	SP	Foreign	06/02	18.777.691	5.682.860	3.761.401	1.649.730	389.156
12	BCN	SP	Local	06/02	18.001.470	8.311.703	6.799.177	1.381.203	152.099
13	BBA Creditanstalt	SP	Local	06/02	17.536.032	4.266.557	5.278.566	1.454.367	169.778
14	Sudameris	SP	Local	06/02	15.005.005	5.975.906	4.724.809	1.327.198	135.621
15	BBV	BA	Foreign	06/02	13.641.266	6.421.145	4.906.228	2.372.605	53.498
16	Votorantim	SP	Local	06/02	13.304.846	5.486.644	502.831	1.221.475	131.543
17	Citibank N A	SP	Foreign	06/02	11.734.129	17.744	2.902.618	807.836	128.473
18	Banco do Nordeste	CE	State	06/02	10.843.587	3.074.276	4.107.404	1.057.919	25.548
19	BankBoston, NA	SP	Foreign	06/02	10.342.275	-----	4.203.690	282.977	(178.931)
20	Banrisul	RS	State	06/02	9.587.191	5.859.396	2.921.771	598.869	55.255
21	Santander	RJ	Foreign	06/02	8.041.889	102.333	970.639	4.354.086	1.317.769
22	Lloyds TSB	SP	Foreign	06/02	7.995.682	1.211.796	938.748	525.421	130.446
23	Deutsche Bank	SP	Foreign	06/02	7.320.925	1.083.930	982.931	402.295	114.443
24	Mercantil de São Paulo	SP	Local	06/02	7.042.114	4.276.750	2.532.506	711.676	(329.871)
25	Boavista InterAtlânt	SP	Local	06/02	6.668.355	1.426.838	24.263	4.480.195	187.239
26	Banerj	RJ	Local	06/02	5.945.088	2.234.770	483.083	2.898.500	221.114
27	Banco Fiat	SP	Foreign	06/02	4.644.857	3.363.909	3.333.431	778.512	81.377
28	Santos	SP	Local	06/02	4.483.939	936.780	1.507.141	364.006	55.704
29	Rural	RJ	Local	06/02	4.353.219	2.077.675	2.229.232	504.003	51.709
30	Bandepe	PE	Foreign	06/02	4.231.919	1.669.496	212.292	1.155.172	92.010
31	Basa	PA	State	06/02	4.186.826	1.040.580	273.249	1.035.558	60.457
32	ABC Brasil	SP	Foreign	06/02	3.853.572	676.607	1.600.735	379.738	41.953
33	Mercantil do Brasil	MG	Local	06/02	3.702.292	2.119.944	1.502.127	406.447	11.504
34	Beal	SP	Foreign	06/02	3.554.582	308.818	275.929	222.475	11.100
35	Fibra	SP	Local	06/02	3.540.713	1.153.837	387.592	330.926	23.128
36	Continental	SP	Local	06/02	3.318.797	2.633.733	3.034.445	171.437	26.436
37	Banestado	PR	Local	06/02	3.276.245	1.621.728	559.329	429.213	(153.024)
38	Santander Meridional	RS	Foreign	06/02	3.138.593	1.570.594	617.671	919.031	124.985
39	Volkswagen	SP	Foreign	06/02	3.111.129	2.393.053	2.704.445	362.293	26.629
40	Berge	MG	Local	06/02	2.798.317	681.514	33.349	1.854.955	47.717
41	Dibens	SP	Local	06/02	2.307.879	1.223.097	1.187.491	171.827	17.613
42	Biobanco	SP	Local	06/02	2.178.141	1.173.592	1.231.088	293.819	27.659
43	Credireal	MG	Local	06/02	2.144.127	-----	-----	2.026.671	68.396
44	Besc	SC	State	06/02	1.969.419	483.406	127.132	707.425	38.972
45	Panamericano	SP	Local	06/02	1.775.298	1.435.657	1.042.491	196.556	10.784
46	Brascan	RJ	Foreign	06/02	1.746.893	350.319	329.131	207.794	13.299
47	Baneb	BA	Local	06/02	1.728.832	199	-----	1.512.378	49.000
48	BRB	DF	State	06/02	1.485.204	933.791	476.434	230.916	25.391
49	BBM	BA	Local	06/02	1.424.752	181.803	132.063	245.119	5.688
50	BMC	SP	Local	06/02	1.392.634	458.398	673.917	223.650	23.105
Accumulated (50)					904.184.016	384.023.039	232.297.941	91.342.104	9.062.217

Source: Gazeta Mercatil information center.

the Central Bank managed, for the first time this year, to roll over 100% of a parcel of the debt indexed to the exchange rate. For this operation the CB had to use, principally, short term papers: 80% of the due amount was changed for "swap" contracts maturing in December 2002 and 20% for papers maturing in December 2003. The parity of the dollar dropped and the Sao Paulo stock exchange closed higher.

This does not mean, in any shape or form, that the internal debt does not pose a problem. The debt, at the end of September represented 47.5% of the Brazilian GNP. It is a high proportion but still lower than a number of developed nations where the internal debt is almost on a par with the GNP and in some cases surpasses it. Basically, and adopted as a standard for many decades, the problem of Brazil's internal debt is a profile of the country and is highly concentrated in the mid and short-terms. The debt, of course, would be far easier to manage if it were elongated. This, however, can only occur gradually and depends on the country stimulating more confidence in its economy from foreign investors. According to spokespeople for the Luiz Inácio Lula da Silva's future government the hypothesis of determining longer pay back terms by decree or imposition by the government is out of the question. The president elect himself was emphatic on this point during his election campaign.

That said, the internal debt still constitutes a serious obstacle for a more rapid development of the Brazilian economy. This is because whilst the debt is growing and has to be rolled over in the short term it brings pressure to bear on interest rates as banks are forced to charge higher rates to complete the roll over. Apart from this there is also the country's external dependence. In a phase like the one we are presently going through, with a reduction in the flux of financing for Brazil due to the overall international situation, the result is a shrinking of internal liquidity, a fact that also pressures interest rates. In a situation like this the cost of money becomes even more problematical for Brazilian companies many of whom are fighting on a daily basis to obtain working capital. As consumer credit is also affected by a reduction in the payment terms and higher interest

rates the result is a contraction of internal demand. External investments are still quite considerable, (US\$14.9 billion through September this year), but the expansion of the internal market and exports are essential for attracting more direct foreign investment and for stimulating larger domestic investments.

This is, in overall terms, the scenario that will greet the new government. Fortunately, thanks to exceptional harvests and notable gains in productivity in the agricultural sector, Brazil succeeded in increasing exports between January and October this year when foreign sales reached US\$49.992 billion, an advance of 1.25% over the first 10 months of 2001 (US\$49.377 billion). As imports dropped by 16.59%, consolidating at US\$39.932 billion, the surplus in the trade balance presently stands at US\$10.060 billion and could surpass US\$11 billion by the end of the year. This is, without a doubt, the right path to reducing external dependency and reinforcing confidence in the enormous potential of the Brazilian economy, attracting new investments and, as a result, creating conditions for the Brazilian economy to grow at rates that are compatible with the expectations of its population.

At the same time it is to be hoped that the Central Bank will adapt to the changes. A moot point is whether the CB should be "independent" with a fixed mandate for its Board that would avoid changes in monetary policy to suit political ends. In the opinion of some analysts this could compromise the targets set for inflation. The next government, according to what can be deduced from declarations by economists working as advisors, rejects the idea of an independent CB as far as an institution with no political ties is concerned. But a Central Bank that is autonomous in regards to the orientation of monetary policy is acceptable. At the same time the CB should limit any scope of action that extrapolates that of guardian of the currency and also cut back on its direct participation in the market, a source of considerable losses for the institution and something that should be covered with budgetary resources.





The logistics of hope

In those fleeting moments when we take leave of the greenery in the West of Brazil the blistering heat makes it seem like the sun and the earth are one and clouds of spiraling dust play the role of extras. Nevertheless, and thankfully, the transition is a quick one. We soon come upon a new and boundless horizon of soybean, the magical grain that has carried Brazil to second place in terms of world production and created a handsome surplus to the trade balance. It is in this scenario that we find the New Brazil, although the population at large remains in blissful ignorance of how our country is asserting its position as one of the world's most important providers of food.

Large tracts of land are not enough if the tools of research are not in place to create resistant species capable of conquering the inhospitable Promised Land. The MT Foundation was created through the initiative of the new colonizers. Its job is to research and produce species that adapt to the region in order to become blight resistant. This is one of the reasons why the State of Mato Grosso manages to beat productivity records - in 1993 2,500 kilos of grain were reaped per hectare. Today, some farmers manage to produce more than 3,500 kilos per hectare, which surpasses even the United States, the former champions, who are reaping some 2,600 kilos.

Lairto lives in this "bread-basket of the world". He discovered the New Brazil. "This is marvelous. I have been planting soybean for 18 years and the rain has never let me down", says Lairto João Sperandio, a combination of farmer, agronomist, and the mayor of Alto Taquari, a city in Mato Grosso with 8 thousand inhabitants and an unbelievable growth rate of 15% per year. It occupies fourth place in the per-capita revenue ranking of the State. Lairto has no regrets about leaving the town of Itajobi near Sao Jose do Rio Preto in the interior of Sao Paulo. On the contrary, he is very happy he made this decision in the early eighties. "With the money I received for a few hectares in Sao Paulo I now have three thousand here and am harvesting 150 thousand sacks of soybean a year", he states.

Lairto gave up the habit of always criticizing the country to become a certified fan of hope and new horizons. However, for his friends who stayed behind in Itajobi this New Brazil is either a pipe dream or something you might see in the movies. From the fruits of his success Lairto now owns an airplane, harvesters and tractors and admits he is embarrassed when he visits his friends in Sao Paulo. "Unfortunately they are bogged down in time and can't believe it when I say that purchasing a 200-thousand dollar harvester is commonplace in Mato Grosso."

In the Brazilian West, everything takes place on a large scale: the areas that are planted, the ambition

of the pioneers and, more recently, the trains. Convoys of a hundred wagons or more are hauled by three powerful locomotives of 4,400 hp transporting 12 thousand tons of soybean grain or meal on each trip. Large trains have one common purpose: to enable the lowest logistical costs possible for Brazilian soybean on its way to overseas markets.

This is where Ferronorte, Brazil's newest railway, enters the picture. It has always been said and taken for granted that for medium and long distances low value-added products should avoid transport by truck. They should, preferably, use boats or trains. One Ferronorte train removes 450 conventional trucks from the roads. In 2002, it is expected that 5.5 million tons will be transported, (80% of them soybean), and Ferronorte will take some 200 thousand trucks off the highways. As all the Ferronorte cargo is destined to the port of Santos it is obvious that rail transport is helping to free the highways of trucks. This is a significant fact when we consider the overspill of traffic that already gridlocks the Metropolitan Sao Paulo region. Trucks coming from the interior still have to pass through the city to reach the port of Santos.

What good does it do to put the blame on the country, the politicians, or the inertia of the government? Someone who firmly believed in entrepreneurial action, businessman Olacyr de Moraes, currently somewhat forgotten by the media was the person who started Ferronorte but



Locomotive at the Portland Perus cement factory that used to run on the line Pirapora-Perus railroad, in Sao Paulo, in the middle of the last century.



Extension of the Railroads - Mainlines and Branchlines

(IN km)

Railroad	1996	1997	1998	1999	2000
TOTAL	29.301	29.746	29.213	29.144	29.283
Companhia Brasileira de Trens Urbanos - CBTU	249	252	252	252	251
Companhia Fluminense de Trens Urbanos - Flumitrens	264	271	293	121	121
Companhia Paulista de Trens Metropolitanos - CPTM	270	270	274	274	274
Empresa de Trens Urbanos de Porto Alegre-Trensurb	27	31	31	31	34
Estrada de Ferro Campos do Jordão	47	47	47	47	47
Estrada de Ferro Carajás	892	892	892	892	892
Estrada de Ferro da Mineração Rio do Norte	35	35	35	35	35
Estrada de Ferro do Amapá	194	194	194	194	194
Estrada de Ferro do Jari	68	68	68	68	68
Estrada de Ferro Paraná Oeste S.A. - Ferroeste	249	—	—	—	—
Estrada de Ferro Vitória a Minas	898	898	898	905	905
Estrada de Ferro Votorantim	20	20	—	—	—
Ferrovias Norte do Brasil - Ferronorte	—	—	324	420	463
Ferrovia Norte-Sul	92	92	106	106	200
Ferrovia Paraná - Ferropar	—	249	248	248	248
Ferrovias Bandeirantes S.A. - Ferrobán (ex-Fepasa)	4.625	4.493	4.235	4.235	4.235
Rede Ferroviária Federal S.A. - RFFSA	21.371	21.934	21.316	21.316	21.316
Companhia Ferroviária do Nordeste S.A. - CFN	—	4.860	4.238	4.238	4.238
Ferrovia Centro-Atlântica S.A. - FCA	7.080	7.080	7.080	7.080	7.080
Ferrovia Novoeste S.A.	1.621	1.622	1.626	1.626	1.626
América Latina Logística do Brasil S.A. - ALL (ex-FSA)	—	6.534	6.534	6.534	6.534
Ferrovia Tereza Cristina S.A. - FTC	—	164	164	164	164
MRS Logística S.A.	1.674	1.674	1.674	1.674	1.674

Source: As empresas concessionárias

this does not take away his importance as a pioneer. In the same vein as Olacyr another Brazilian can honestly say he managed to rouse the sleeping giant. He answers to the name of Blairo Maggi. Blairo was 45 years old in 2002. He was born in Parana and two decades ago he migrated to the New West, the fastest growing region in the Country.

Blairo, who directs the Maggi group, although young, has a vast curriculum of successes under his belt. His group of companies - producing, processing and exporting soybean, generating energy and implementing logistics - will be closing 2002 with \$500 million in revenues, the equivalent to almost the whole of Mato Grosso's revenues the previous year. Another feather in his cap is the title of "the King of Soybean" because he is the largest grower of a grain that is responsible for the surplus in Brazil's foreign trade balance. This same Blairo, a candidate for governor of Mato Grosso, says he is ready for whatever befalls him including the slippery corridors of power. "Brazil and Africa both have vast amounts of spare land, regions with good climates and a geology that favors farming. If we just sit here and complain we will turn into another

Africa. But our advantage is that we prefer to work", he says.

Blairo lives and works far from the centers steeped in pessimism. As a farmer and agricultural trader he pays a lot of attention to logistics because this is the tool that keeps him competitive. His father, Andre Maggi, who passed away in 2001, was the protagonist of this pioneering spirit. He was the man that founded Sapezal, a town that is only eight years old but harvested a total of 18 million sacks of soybean in the 2001/2002 crops, the third largest harvest the State of Matto Grosso. The conquests of the Maggi clan had a lot to do with their attitude to business. They are an example of the fact that farsightedness is fundamental for growing a business. For example, one aspect of their success was acting as an informal bank. And a lot of attention was paid to state-of-the-art technology both in farming and in operational logistics without which little can be done in the invincible Mato Grosso.

In fact, and before it reached \$300 million in annual revenues the group founded by André Maggi serviced the neighboring farmers in the same way as a bank. Since the seventies, the patriarch, André,



Next to the Carajas iron mines, the railway convoy is loaded for transportation to the port of Itaqui (MA).

financed the purchase of seeds, equipment and other inputs. The borrowers paid him back in crops. However, one of the greatest insights of the group was, undoubtedly, to search for a cheaper logistical way of removing this farm production from the new Western Frontier. The solution proved to be by water or more specifically the rivers. What is lacking in Brazil for the country to be more competitive in grains? There is an abundance of land plus climate, soil, and farming technology do not pose a problem. Brazil is absolutely capable of doubling its production of grains and not only in Mato Grosso, Blairo Maggi never hesitates to say. What is lacking? Logistics is his reply. And moving from theory to action some years ago he devised an incredible project to put together a river transport system that would take the soybean as far as the ports thereby reducing the cost of transportation.

In this part of the story boldness is not enough, what is needed is technology. Proof of this can be seen when the river convoy arrives at Itacoatiara, a city on the banks of the Amazon River, 260 km from Manaus. It is a medium sized tug-boat that pulls nine interconnected barges that are 200 meters long and 33 meters wide. This convoy is capable of transporting 16 thousand tons of soybean coming from Mato Grosso. A shipment like this eliminates the need for 600 trucks. The fleet of barges leaves from Porto Velho, the capital city of Rondônia. Itacoatiara, on the Amazon, is the point of arrival.

The route for transporting the cargo is via the Madeira-Amazonas waterway and this saves 20% in freight charges on the export price of soybean. This was an exit route that reversed previous logistics and created an alternative for production in the north of the country. Ships flying European and Asian flags ply their way from the salt water of the oceans to the fresh water of the mighty Amazon traveling 1,100 km up-river. Time and money is saved: in addition to lower freight costs the ships no longer have to pick up the cargo in the ports of Santos (SP) and Paranagua (PR). In other words, they save six days on the round trip. Since 1997, when it was inaugurated, and until 2002, the Madeira-Amazonas-Itacoatiara fluvial alternative for cargo made extraordinary leaps in productivity. It went from 350 thousand tons to 1.2 million tons of soybean. "Recently we have also started transporting corn", notes Blairo.

Navigation in rivers may sound easy. And it is, says Maggi. But it requires technology to gain assiduity and productivity. R\$66 million were invested in the following logistics: two floating ports, one in Porto Velho and the other in Itacoatiara. The floating port compensates the surge in the level of the rivers, which, between the dry and the rainy season can result in a difference in level of 14 meters. The money was also used on loading and unloading equipment brought from Sweden, a cold region, very different from the tropical Amazon, but equally



Container terminal in the port of Vitória (ES), one of Brazil largest export-import complexes.

AIRPORT INFRASTRUCTURE



National Airports



International Airports

humid. Boats and barges were redesigned to be able to cope with the tree trunks that drift in the rivers of the region and to navigate in water that, sometimes, is only waist deep.

In a part of Brazil that was forgotten technology suddenly appeared on the scene. Aboard these boats electronics guide the way through the middle of the jungle. Each tug was equipped with electronic devices that literally "drive" the vessel by satellite monitoring whilst a computer program shows the way to be followed and how to avoid the shallows. If logistics is what is lacking to make Brazilian grain competitive then let's take care of it. This is the way Blairo Maggi thinks. "We are in hand-to-hand

combat with the rest of the world so we have to be better and cheaper" he resumes.

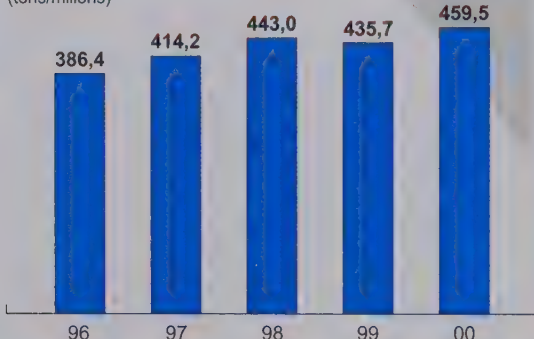
The giant multinational company Cargill, one of the world's largest agricultural trading companies, knows how important logistics are to its business. Omnipresent worldwide, the company - it is calculated - moves some 15 million tons of agricultural products a year in Brazil. It is clear that Cargill cannot ignore the world's new agricultural provider. And wherever the company arrives, it sets up operations with its own logistical solutions. For this reason it will be inaugurating, in the first quarter of 2003, its own port in Santarém, PA. This represents a new logistical initiative that is in a start-up phase and will have an annual shipping capacity of one million tons of soybean when fully operational. To start with, the terminal will be supplied with grain from two cities in Mato Grosso; Sapezal and Campos de Júlio. The initial estimate is to ship 300 thousand tons per year. The warehousing capacity in the terminal is 60 thousand tons that represents a sufficient load for ships like the Panamax, that will moor on the banks of the Tapajós River in Santarém before making its way to Europe.

The company that will supply part of Cargill's cargo belongs to another clever Brazilian pioneer. This is Irani Bertolini, from Rio Grande do Sul, the son of Eugênio Bertolini, who, in the forties used to transport wine barrels in a cart pulled by mules in the mountain ranges of Caxias do Sul. Irani Bertolini founded the Transportes Bertolini Company in May of 1978, in Bento Gonçalves, the birthplace of other pioneering transportation companies. "When I decided to carry on with the trucking business started by my father I didn't have time to go to school: My experience came from listening to the revs of the boat and truck engines. There were a lot of hits and misses before we structured our business in the manner required by the market".

Today, Irani Bertolini directs one of Brazil's largest transport companies, with annual revenues of R\$120 million. He is the owner of a fleet of 150 heavy trucks and 1,000 regular sized ones. He builds his own trucks that travel on the ferries that he also manufactures in his boat-yard. Irani's story is like that of many other people from Rio Grande do Sul who dared to discover Brazil in the cabin of a truck.

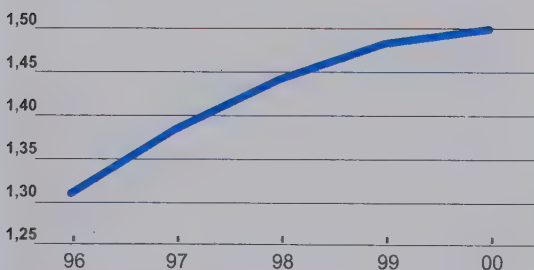
Cargo transported

(tons/millions)



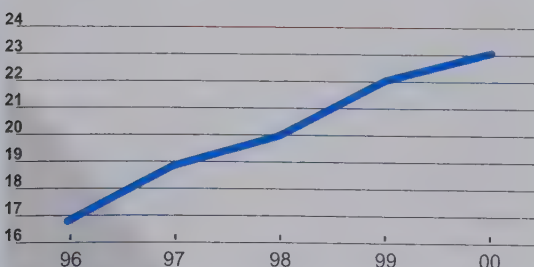
Transport of containers

(units/millions)



Transport of containers

(tons/millions)



Source: Nononono Nononono

INFRASTRUCTURE OF THE PORTS AND WATERWAYS



- Ports under the authority of Cia Docas and controlled by the Union
- Ports administered by states and municipalities
- Ports administered by private companies

Obs: Exclusive and mixed use terminals were not included

Driving a Mercedes-Benz model 1111, year 66, with an 1113 engine, he arrived in Manaus to deliver a load of furniture. He heard so many complaints from local trade people regarding the difficulties they were facing obtaining furniture from the South that was not damaged on route, that he decided to specialize in the transport of furniture.

One cannot get to Manaus without using the river. For this reason his next step was to include river transport in his business. Then he became the owner of barges and tugs. In addition to furniture, he started to transport electronic products and motorcycles that were manufactured in the tax-free zone. Today, with 1,500 employees and the owner of several companies, Irani Bertolini is taking another step forward: the transport of soybean down the Ma-

national crime that is being committed. I forwarded a communication to the ministry of Transport informing that the roads of the Amazon, without scales, are left in the hands of God", says the ex-truck driver Bertolini, today the president of the Federation of the Amazon Transportation Companies.

Solutions for hacking roads through the Amazon forests have proved to be total misconceptions, forgotten in terms of government policy but remembered by the people who put their faith in them. This was the opinion of Edson Luiz, a reporter for the Estado de São Paulo newspaper in an article he wrote in August 2002 - three decades after a poignant day, the 27th of August 1972, when army general Emilio Garrastazo Médici, the country's

president at the time, participated in a ceremony that took place in the heart of the Amazon Forest and cut the ribbon for the official start up of work on the highway that would join the North of Brazil to its compatriots in the Northeast - the Trans-Amazon Highway. "Thirty years later, the highway hasn't gone anywhere", the article points out. Only one stretch linking Aguiarnópolis to Labrea was effectively completed but traffic is limited to certain times of the year. Today, the Trans-Amazon highway stretches for 2,500 kilometers, one quarter of the initial project. Only 250 kilometers of the highway were asphalted. Completion of the work along the rest of the road is a part of the government's "Brazil On The Move" project but few people believe it will ever

take place. "If they didn't do anything over the last thirty years it won't be now, at a time when the government is changing, that we can expect promises to be kept", says, with customary pragmatism, a bus driver named Raimundo de Oliveira Andrade.

Brazil has come a long way in terms of roads and highways even though their maintenance remains problematical. In his book - Highway Concessions, the Myth and the Reality - the writer Kal Machado draws attention to the fact that in 1940 Brazil's highway and road network amounted to 192 thousand kilometers of which



Cranes in the Port of Pecém, close to Fortaleza, in Ceará. It is one of Brazil's most modern ports.

deira river, between Porto Velho, the capital of Rondônia, and the Port of Santarém, in Pará. He signed an agreement with the multinational Cargill to transport 500 thousand tons of grains. It is advantageous for Brazil to use the rivers and railroads especially in the Amazon region where building and maintaining roads is a tough task. The difficulty starts with the rainy climate that ruins the surface of the road. Another is the non-existence of scales for weighing the trucks, which, without scrutiny do as they wish and contribute to the deterioration of whatever paving is left. "It is a

only 775 were paved. By 1965 this network had tripled to 570.000 kilometers and the paved section was 19 thousand kilometers, an increase of 25 times in 25 years. From the middle of the sixties until the present day, or over the last forty years, the extension of federal, state, and municipal roads has grown to something like 1.5 million kilometers. This represents a growth rate of three to one whilst during the same time the amount of vehicles in Brazil has multiplied by ten, from two to twenty million.

Roads are the prevailing factor when it comes to transport in Brazil. About 60% of cargo and 95% of travelers use the roads. The persistent lack of investment in alternative forms of transport has led to this dependency on roads. It is easy to think that this monopoly guarantees operational/financial results for this sector. Not so, say the results of surveys that have been looking at performance and statistics involving transport companies and infrastructure. The last survey carried out by the National Transport Confederation, published in 2002, shows that the disadvantages weigh heavily on the statistics of the road transport companies. An unbelievable 78.5% have no intention of renewing their fleet of trucks. During the year 2002, 65% specifically declared that they would not buy or substitute their vehicles. Only one third said that they would make new acquisitions

Food for thought: if the companies are renewing their fleets at a slower rate than before it is because their principle service suppliers have assumed this responsibility. This, however, is not the case. Part of the CNT survey, that deals with self-employed truck drivers shows that two thirds of them do not know when they will be able to change their truck. The average lifespan of a truck is 15 years. Fact of life - the older the truck, the harder it is to trade it in. Another nightmare that the truck-drivers have to live with is the number of hours they spend behind the wheel each day. The CNT survey revealed that 51.5% of them work from 13 to 19 hours a day. Another 10.4% work 20 hours, if not more. Only 6% of the drivers that were interviewed carry out a regular 8-hour workday. In this inhuman rhythm of work it is only to be expected that accidents are the bane of life of truck drivers. During 2001, 35% of them ran into some kind of trouble. The majority of the accidents were caused by collisions or crashes. The second most frequent incident was found to be trucks overturning due to fatigue on the part of the driver.

Trucks transport most of the cargo in Brazil. And it is evident that the self-employed trucker, who plays the leading role, does not come out of it too well. Just to make things worse the CNT survey drew attention to two complicating factors in the life of the independent truck driver. These



A unencouraging-photo of a state highway in the interior of São Paulo. It could well be in any of the other states.



Ecovia operates the Anchieta-Imigrantes system, the highway that connects São Paulo to the port of Santos and to the coast of São Paulo.

are the corruption and corresponding bribes that have to be paid to the tax inspectors and police authorities on the highways, and the threat of being hijacked. At the same time, most of the truckers (66.2%) have no type of health insurance. The poor state of the highways - a problem that the CNT survey assessed at the high rate of 56 % in their survey with the truckers - is presented in another part of this appraisal. Monitored between 1996 and 2001, the expression "deficient" is the comment that we hear the most in terms of the conservation of the highways: this statistic reached a peak in 1997 (89.4%) compared to a low of 46.3% in 1993. It has to be said that Brazil is not a role model for anyone in terms of its road system. It could be argued that things used to be worse but this is not really a consolation especially when we think about "Cost of Production in Brazil" and the thousands of people who are involved in the interminable road accidents. According to Denatran, during the year 2000 more than 20,000 people were killed on the roads.

Brazil has already gone through the trauma of collapses in the supply of electrical energy and has learned just what this costs. The recent blackouts literally brought the country to a halt but woke it up to the need for radical measures against wastage that have

led to encouraging results in terms of conservation and rationalization. At the same time breakdowns in the telephone system tend to cost the country dearly and for this reason there is a daily monitoring process of the telecommunications sector.

If the "blackout" in the energy sector and the "whiteout" in the telephone system caused chaos in the transport infrastructure then a "gridlock" could also be possible but the chances are remote. Basically this hypothesis has been continuously postponed due to the unpretentious growth of the GNP during the eighties and nineties. This was quite the opposite of the previous economic cycle when the growth rate bordered on 7%. "Up until 1980 young people were sure they would become more affluent than their parents and grandparents. Since 1980 and especially in the nineties they have come to realize they will be worse off, a major change in outlook and perspectives", says Josef Barat, a consultant for transport infrastructure issues at Abdib. He held this post twice in Rio de Janeiro. "In my opinion the transport infrastructure in this country is on the edge of chaos. The country carries on growing but the deficiency in this sector continues adding value to the so-called Cost of Brazil", he comments.

To be more explicit, Brazil is moving at a snails pace in terms of improving its road networks. This

FEDERAL HIGHWAY INFRASTRUCTURE



has a lot to do with the extinction, in 1988, of funding allocated towards road transport that, apparently, has been resuscitated with the name of CIDE but, as far as anyone knows, continues to be a number in the books of the Federal Budget that has not been passed through to any kind of infrastructure. Two icons of the lack of attention paid to Federal highways are the Fernao Dias (Sao Paulo - Belo Horizonte) and the Regis Bittencourt that links Sao Paulo with Curitiba. These are strategic connection routes between some of the most important capital cities in the Southeast but the widening of these highways has still not been completed ten years after work was started.

In stark comparison with the State's inertia, private companies, "the concessionaires" of 7% of the highways, are calling the tune with a demonstration of competence and dynamism. The main point of contention is the public's reluctance in paying for the service - the toll fee. But there is at least one case that illustrates the dynamism of private investment versus state bureaucracy in managing roads. This is the example of the Anchieta/Immigrantes system that links São Paulo with the coast, a total of 177 kilometers ceded to the company Ecovias, which is a partnership between Brazilian construction companies and the Italian company Impreglio. The contract with the Sao Paulo state government began in 1998 and runs through 2018. The complex charges a toll fee on 30 million vehicles per year. Before it was privatized the state government was already charging a toll but there were no improvements to the road. Truly a paradox compared with what can be seen today. The state operator was charging a toll but didn't carry out any type of improvements. With no infrastructure and considering the motorized masses of the Brazilian population a bottleneck was almost inevitable. As soon as it took over responsibility for the highway Ecovias set a project in motion that had been on the shelf for two decades - the second Immigrantes highway. In the space of three years this project is becoming a reality and hasn't cost the government a cent. It is important to stress the importance of this project because we are talking about a road that joins Brazil's largest city to one of the country's largest port complexes in the city of Santos. Apart from the fact that an efficient

connection with the coast promotes a flux of millions of weekend tourists.

The benefits for the government are quite considerable: it receives a down payment for the concession rights, participates in the ongoing revenue and is not under the obligation of making new investments. Not to mention that the adjacent towns also receive a part of the proceeds efficiently collected by the concessionaire. Politically, the waters are not quite so smooth. In Brazil there is an ingrained resistance to paying any sort of tax, especially one that imposes on the right to come and go. Brazilians are already fed up with the excessive amount of taxes and basically don't feel like putting their hands in their pocket to pay yet again, especially if we are talking about a toll.

The operators recognize the fact that they are not being successful in convincing the public of the advantages of better services, plus a reduction in accidents and operational costs. Most of the concessionaires come from the heavy construction sector, an activity that is used to large projects, lobbying and conversations behind closed doors. Consequently they are not used to dealing with the public. The president of Ecovias, Irineu Meireles, is the first to admit this fault "the challenge for someone from private enterprise that takes on a public service is to turn the tables on the low quality of service that has traditionally plagued these services". Another confession from Meireles, "We are companies, almost all of us, with our roots in the construction business and we still tend to approach things from a political point of view. What we should be doing is strengthening our links to the community instead of remaining isolated".

In most countries around the world government investments in roads and highways are in reverse

Extension of paved highways
(in km)

Region	1997	1999	2000
TOTAL	150.836	164.247	164.988
North	9.475	12.083	12.394
Northeast	41.763	44.693	45.232
Southeast	52.574	54.216	54.184
South	29.820	32.441	32.364
Midwest	17.204	20.814	20.814

Source: DNER

gear. Information released by the world's second largest investor in highway concessions, the Macquarie Bank Limited of Australia, and passed on to the São Paulo Stock Exchange, shows that, between 1970 and 1997, the American government reduced funding for roads by 30% and in Germany this statistic reached 65%. It is calculated that the drop in Brazil has been even greater because of the extinction of the National Highway Fund in 1988. Governments are increasingly focused on social problems and all over the world they prefer to leave the job of conserving, building and administering highways to private enterprise. The greatest dilemma surrounding private concessions is convincing the general public that they should pay the toll.

If privatization of the roads is meeting with success in operational terms, although not in institutional ones, in the railway sector the community saw the disengagement of the government from the tracks as a blessing. Julio Fontana Neto, president of the National Association of Railway Transport Companies (ANTF) said "If we compare the results for 2001 with those of 1996, (the last year of state intervention in the operation of the railways), it can be seen that the ton/kilometer factor has increased by 68%, the number of accidents has dropped by 41% and the average fare has been reduced by 30%. Fontana says that the next challenge is infrastructure. The average velocity here is 25 kilometers/hour whereas in the United States, where the railways are also privately run, the average is 80 k/h, and local government is planning to invest \$70 billion to improve the system. He goes on to say that "the concessionaires are willing to contribute but there are limits". Apart from this the railway infrastructure continues to be state owned. ANTF calculates that the railways need investments of R\$20 billion over the next ten years. The money should come from government coffers they claim. Government, however, doesn't seem to be of the same opinion. If we take the sum of R\$135 million that was allocated to the railways in the 2002 budget, at this rate it will take 70 years for ANTF to reach their target.

If the private initiative that leased the railroads - a business that was in the hands of the State for five

decades - is a bit short of wind it is also creative and artful enough to negotiate issues that were unthinkable during public management. Every railroad ends up in a port. Without this option the railways would become non-productive and incapable of guaranteeing sustainable growth. The leaseholder of 6.5 million kilometers of rails, a little less than one quarter of the total network that was privatized in Brazil, ALL-América Latina Logística took over some regional lines in the South. It has also expanded into Argentina, purchased a road transport company - Delara - and is investing in ports. Its aim is to follow the client wherever it may be offering not only a railway service but a complete logistics solution as well. Another operator, MRS Logística, which leased, a total of 1.7 thousand kilometers, or 6% of the grid, in the States of Minas, Rio and São Paulo, opted to establish partnerships with clients and transport companies to round off the logistics cycle. Two examples of these actions are as follows: it reestablished, in the Paraíba Valley, a deactivated branch line of the Basf company and, in the Metropolitan São Paulo area a stretch of some kilometers to service a new client, VCP, a company in the Votorantim group. In both cases the companies shipping merchandise invest in wagons and get reimbursed for them with discounts on the freight.

The original design of the privatized lines is slowly but surely adjusting to the reality of the load flows and creating an operating scale to meet the needs of logistics. At the beginning of 2002, for example, Ferroban, Ferronorte, Novoeste and Portofer merged their operations under one holding company, Brasil Ferrovias. The objective of this merger is growth, especially in the transport of agricultural products emanating from the new provider, the Midwest region. However, consultant Barat makes restrictions regarding the fact that some concessionaires are simultaneously major users. "In these cases the railway is a cost factor of their core business".

Maggi, the businessman from Parana, the former truck driver from Rio Grande do Sul, Bertolini and the North-American giant, Cargill, use logistics as a competition weapon for their businesses. The big talk is logistics. Be it in a university or post-graduate courses or even in a

lonely service station by the side of the road where a parked truck exhibits a bumper sticker with a word borrowed from French, *logistique*. Logistics has always existed. Products were always transported, warehoused, purchased and sold. However progress came with the concept of integrated logistics. In other words, it is not only the cost reduction of an individual activity that is sought (like in transport for example), but also the total logistics cost of the company. These logistic costs are as follows: transport, controlling inventory, warehousing, order processing, production batches, purchases and client services.

However, one event that contributed enormously for the visualization of logistics was the Gulf War at the beginning of the nineties. Logistics is critical in all wars but in this particular one it took center stage. As it happened the United States and its allies gathered the largest army ever since the end of Second World War. The war placed the emphasis on logistics and showed its strategic relevance. Within a 30-day period 500,000 soldiers disembarked in the Middle East with all the equipment and infrastructure necessary to sustain this huge amount of troops, a fact that pointed out the strategic potential of logistics stresses Walter Zinn, a Brazilian born in São Paulo who teaches logistics at Ohio University in the United States. The first courses on the subject in Ohio date from the sixties.

The State of Ohio is located between Chicago and New York, and between Michigan and the

South of the country. Highways and railways are obliged to pass through it and, for a long time, the warehousing industry and transport services have been the strong points of the region. Zinn is aware that in the same way as any other activity, logistics are easier to practice in developed countries. "However, what I always say is that the Brazilian businessman has to compete with companies in Brazil. It is necessary to be better than the competition. Thus, it is not a good strategy to cross his arms and wait for Brazil to develop first. To exemplify that, I can mention three stories of success in logistics: Souza Cruz, cigarettes, Avon, cosmetics, and Martins, a logistics operator. These three companies always had a good logistics performance, especially because speed is of prime importance. In companies that produce cigarettes there is a saying, always present and faithfully complied with, that states the following: the cigarette that is not smoked today will not be smoked twice tomorrow. Therefore, distribution is as important as production and sales.

Logistics, as professor Zinn says, requires homework. If companies remain waiting for Brazil to change many of them will be strangled before this happens. There used to be a lazy attitude towards adjusting to logistics partly a result of the inflation that lasted a good two decades. It is true that, in those days, the cost of inefficiency ended up being absorbed by the pass-through to prices.

The king lost his clothes when inflation was brought under control. When buyers became a rare commodity imports opened up, money became more expensive, and those that had made a start in logistics tried to protect themselves from the worst and become better prepared than the competition. In a recent study conducted by Bain & Company with more than 500 companies in 15 different segments of the economy, 80% of the companies acknowledged that logistic is already an important competitive differential. At the same time, many of them showed that they did not fully comprehend their logistics chains. Several companies did



The lobby of the International Airport of Fortaleza (CE). It has been modernized to improve passenger handling.

not manage to precisely calculate the total costs associated with their logistics. And only a very small amount follows up on indicators that are critical to performance.

However, according to Bain, most companies in all sectors realize that their costs are on the rise and can see ways of reducing them in their logistics chain. Even more interesting is the fact that many of them already notice that the best opportunities are not only in transport (which, for years, was the main target of any program for enhancing logistics, putting pressure on the transport companies to reduce prices), and they already mention management of inventory, orders and imports, amongst others, as activities with great potential for improvements. It is important to point out that the difference between the companies that manage their logistics chain well and the others is truly relevant. In another recent study carried out by Bain & Company, in the United States and Germany, the costs of the better prepared companies in the same industry were twice as low as the average.

Clients know that logistics are fundamental. In the Brazilian research carried out by Bain 70% of the companies interviewed stressed punctuality and reliability of delivery as the main improvements to be pursued.

Industries with larger potential for gains in logistics are those that show more complex and fragmented logistics chains. Industries with a large number of transactions (that is, many suppliers, many sales points) are more difficult to manage and therefore show potential for higher gains with well resolved logistics. At the business level the modernization process has been led by two segments: the automobile and the large retail industries. Why these two sectors? Local demand is lower than offer - an effect of the strong drop in the country's available capital, both on a company level and, consequently, the consumers - a fact that creates more competition in the search for customers.

In the automobile sector logistics are a determining factor in making the business feasible. This is a business that became critical with the proliferation of assembly companies in Brazil in the second half of the nineties. Prior to this there were four different makes of automobiles then, all of a sudden, there were another twelve

manufacturers or representatives. As the market did not expand at the same rate the competitive environment became tougher, something that speeds up the decision taking process in regards to some aspects, two of which are identified in the enhancement of logistics as a source to reduce costs and the other to increment exports as a way of guarantying a return on investments.

Does this sound like an ideal situation? Of course it doesn't. But more progress has been made in the last few years than in the last two centuries. In fact Brazil managed to carry out something that would have been thought of as a fairy tale. The country revolutionized and modernized its port system in a way that no one thought possible. Why? Because, not even the military who took over the country in 1964 dared to challenge the authority and power of the dockworkers and stevedores who had a structure that was considered to be untouchable. This came about because not even the stevedores, one of the oldest and most militant professions on earth, could remain oblivious to the winds of change and refuse to reduce their costs.

What can be seen in Brazil today, although it is not yet perfect, is an impressive advance in the organization of its port system. Privatization has been a fundamental factor and has had significant effects on the sector. In practical terms almost the whole port system has come to the conclusion that better and cheaper service is to everyone's benefit. Decree number 8,630 issued in February 1993 was presented as the so-called Law for the Modernization of the Ports and introduced new elements such as the modern concept of a Port Authority, the creation of mixed-use terminals and port operators.

Almost ten years after commencing this recuperation of the ports what do the users think? A survey carried out at the end of 2001 by the National Transport Confederation (CNT) with 130 shipping companies in 11 Brazilian States revealed that there had been satisfactory advances in operations. This was upheld by 70% of the companies consulted. Their opinion was that there had been a lot of improvement in the agility of port services. Of all the companies interviewed by CNT, 40% thought the standards of cargo handling were good, 37% thought they were satisfactory and only

23% stated they left much to be desired.

A lot of problems can be found in reference to access to the ports but this also depends on the terminal in question.

The complaints - definitely fewer than there were a decade ago - are more focused on the cost of labor. Of the companies that took part in the survey 60% believe that the fees charged by the stevedores are the biggest problem that the port system has on its hands.

It is worthy of mention that the most recent attempt at holding a strike in the port of Santos, one of the country's most important, did not in fact take place. And why was this? Because the port that had 200 meters of docks at the end of the 19th century, and now counts with over 14 kilometers, has gone through a privatization process during recent years. In other words it updated and modernized itself creating a number of terminals and loading facilities that are under separate management. This change, that took place without much commotion but nonetheless was pursued relentlessly, could be accused of destroying collective interests but can also be construed as an auspicious act, something akin to what was preached by the Florentine politician Nicolau Bernardo Machiavel whose dogma was that the fastest way to a solution was by dividing the opposition.

It is indisputable that the privatization of the ports is beneficial and is a fundamental pillar of sustained economic growth. The fact that the railways also passed into the hands of private enterprise was important because both utilities complement each other and when this occurs without traumas costs are reduced and operations become more agile. One example, amongst many others, are the improvements carried out within the port of Santos that allow for a larger amount of cargo to move into and out of the port by rail. Another is an operation mounted by Votarantim, as the client, together with MRS Logistica, a railroad operator. The aim of these new logistics is to add some improvements to an iron - to - port railroad so it can also export cellulose using a forgotten branch-line.

Ports are the visiting card of any country. They can represent its backwardness or its ineptness in

relation to progress. The opposite is also true when they are fine-tuned and dynamic. The opening up of Brazilian ports that took place at the end of the 20th and beginning of the 21st centuries has nothing to do with what happened in 1808 authorized by the Prince Regent at the time, Don Joao VI, whose intention was not to help the colony expand but to maintain it under the economical thumb of Portugal. What is the image we have, even though sometimes this is a stereotype, of the structure of the ports? Of course it is a pre-supposition that they are surrounded on all sides by government and bureaucratic interference.

There is solid proof of the changes taking place amongst which we can see tariffs being reduced and coming into line as competitiveness with other ports comes into play - something unheard of previously. This is not a question of being generous but an absolute and irremediable need to come into terms with the rest of the world guided by an economic globalization where every point counts. The modernization of the ports is an important factor, either when we consider new terminals like the one in Pecem near Fortaleza PE) or Barcarena close to Belem (PA) as well as Suape, 40 kilometers to the south of Recife. In this last example private enterprise has invested \$2 billion to construct a "hub port" that will be able to handle large volumes of cargo.

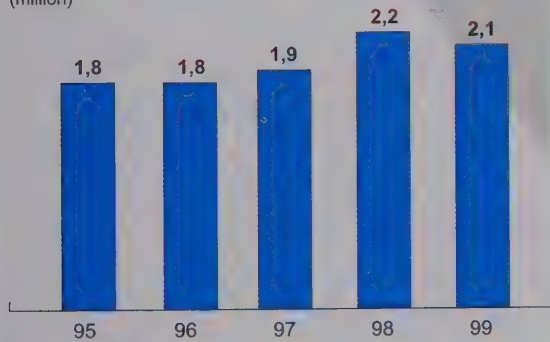
When we compare Brazilian statistics with others around the world it is clear the country is still in its infancy in terms of air transport. The world's busiest airport in Atlanta in the United States transports more than 80 million passengers per year - almost more than the whole of the air traffic in all of the Brazilian airports. The Guarulhos terminal, the country's largest, was ranked in 67th place in the world in 2000 with 14.2 million passengers. The differences are truly huge. But there has been progress despite the crisis that has affected the world's airlines - and Brazil is no exception - and the potential for growth is large and challenging. Infraero administers airports in 27 states around the country. In some cases more than one and the total number comes to 65 across the country.

These contrasts are typical of the country's present stage of development. Infraero operates modern airports like Guarulhos and Galeao that

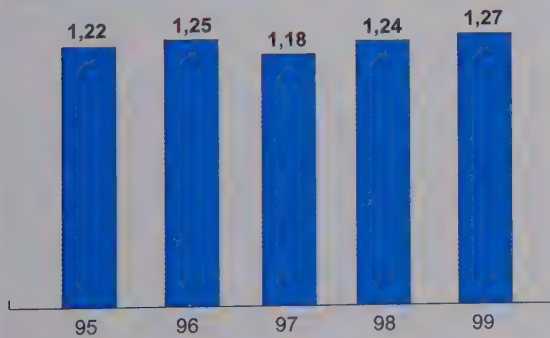
are amongst the largest in Latin América, but also small landing strips in Amazônia where employees are often recruited amongst the natives. Some of these small airports, according to the company, can only be reached by boat. Between the large and modern airports and the minute units in the interior of the country there are a number of medium sized terminals that are going through a process of modernization. Infraero cites the ones in Fortaleza, Natal, Salvador, and Brasília, amongst others.

During 2001 investments made by Infraero in works and equipments came to R\$464 million. In 2002 investments of R\$900 million will take place,

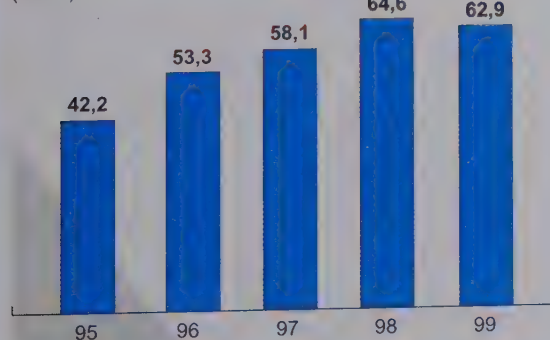
Flux of aircraft (million)



Transport of cargo (million)



Flux of passengers (million)



Source: Ministry of Transport

four times the average spent over recent years. On the list of construction work that will be concluded in 2002 are just about all the airports in the North, Northeast and Midwest. Concentrating one fifth of the movement of the country's 20 busiest airports the international terminal at Guarulhos will be the target of Infraero's largest construction job as from 2002. This involves building the airport's third terminal, and its third runway, with investments of R\$1.3 billion. The whole Infraero budget for 2001 through 2005, R\$3 billion, is set aside for work on infrastructure, expansion and modernization in 18 airports. Of this total R\$908 million are under way and are planned to be finished in 2002. The rest will be spent by 2005.

One source of polemics that Infraero has to deal with is the question of aero-shopping or the installation of retail venues inside the airports as a way of increasing extra revenue that will help keep the taxes in check and consequently leverage more travel. The company contests the critics of the commercialization of the airports with two arguments - one is that this activity compensates the outdated tariffs and avoids passing through these extra charges to the customers. The other is that the concept of commerce in airports is a growing tendency all over the world. Over the next five years R\$3 billion will be spent in infrastructure, expansion and modernization in 18 airports. Of this amount R\$908 million will be applied to projects that are already under way and planned to be finished this year. The rest will be spent up to 2006.

It is also a fact that Brazil's commercial aviation is one of the fastest growing activities in the world at a rate of something like 10/12% per year. The privatization of airport operations has been postponed due to a number of interests but the need to expand international commerce and the resulting increase in the handling of cargo will probably bring this question back into the spotlight. Expansion and modernization of the passenger and cargo terminals is vital especially in congested areas like the State of Sao Paulo. Lack of state resources will inexorably bring the question to the forefront again because of the threat of retarding the development of a sector that is so important in a country of continental proportions.



Visionaries, Pioneers and entrepreneurs

When he became bankrupt in the first year of the 20th century, Delmiro Augusto da Cruz Gouveia, (1863-1917), who was born in the State of Ceará and passionately involved with all of his activities, still managed to find two partners prepared to put up the capital to start a factory and regain the confidence of his creditors.

Starting over didn't worry him. He had come from nothing. He was still a small child in the interior of Ceará when his father died fighting in the war against Paraguay. His mother was not officially the widow of the hero. They moved to Recife and when he was 14, Delmiro survived the worst drought the Northeast had ever known and one that killed 500 thousand people.

His mother died the following year when he was still illiterate. But before he turned 30 he was a rich trader in goat and sheepskins, and a partner in the company Levy and Delmiro. He went into the lucrative sugar business. Apart from his businesses he loved to travel and often went abroad in search of ideas and innovations that he would bring back to Brazil. He returned from the International Exhibition in Chicago in 1899 determined to build the "Mercado do Derby", (the Derby Market), in Recife, that sold a wide variety of merchandise and was open for business 24 hours a day. It was the first

market in Pernambuco to receive electric light.

A bad phase in the skin business together with his political enmities and the large amount of money he spent on traveling brought about his ruin. And the support he received to rebuild his businesses was insufficient for this passionate individual. His passion also extended to women. When he was close to 40 and already separated from his first wife he centered his attentions on the 16-year old daughter of the governor of the Province and eloped with her to the interior. This was why he found himself in the interior of the State of Alagoas where he was to become one of the pillars of the Brazilian electrical energy sector.

He installed himself near to a large waterfall called Paulo Afonso on the São Francisco River with the fixed idea of building a hydroelectric plant. He brought engineers from the United States and imported machinery. The potential of this waterfall was being studied since 1859 when Dom Pedro II visited it. Now, in 1913, it possessed a plant generating 1500 HP in one of its falls called Angiquinho. At this time Delmiro's Companhia Agro Fabril Mercantil opened the doors to its energy powered cotton-spinning factory called Fábrica de Linhas da Pedra

It was proved that, by using electricity, industry could be brought to the Northeast. Its sewing thread, under the brand name Estrela, was sold all over Brazil, Argentina, Chile and Peru. But it also entered a market dominated by the English company Machine Cottons, (today known as Linhas Corrente), which represented a new type of enemy. Delmiro was far ahead of his time. In the decade of 1910, and in this place at the end of the world, he implanted work procedures that would only be adopted by the industrialized regions of the nation almost a century later.

The workers had a workload of eight hours per day and lived in a village of 256 brick-built houses that were serviced with running water and drains. There were schools and free medical assistance as well as nurseries for the worker's children. On the other hand he insisted on certain rules that might seem comical these days such as taking at least one daily bath and others with a more serious connotation such as adults learning to read and write, old age pensions, and music classes to occupy the spare time.

The Pernambuco businessman, João Pereira dos Santos, who was born in 1907 and is still in the command of his conglomerate of companies - eight cement factories and a number of other



View of the dam of the pioneer Paulo Afonso hydroelectric plant, built on the Sao Francisco river.

companies with gross revenues of more than R\$1 billion per year - started off as a messenger in the Fabrica da Pedra when he was eight years old and worked there until the age of eleven. This was when he learned to play music. Basically because he was obliged to do so. Today, he affirms that learning music is a productive way of spending spare time and also contributes to developing the intellect for other callings. This was something similar to the doctrine preached by Heitor Villa-Lobos during the era of the "New State" but the habit died out together with the regime. These days it has been re-adopted by some of the most expensive schools and colleges in the country

Even though he was a man ahead of his time Delmiro Gouveia did not escape from the way differences were settled in those days and in that region. He was shot to death and until this day historians have their doubts about the evidence gathered at the time. Machine Cottons that was trying to buy Fabrica da Pedra, whilst he was alive, managed to do so after his death only to close it down a few years later. His dream of bringing industry to the interior of the Northeast did not materialize but his first hydroelectric plant on the Sao Francisco River is there until this day and is a symbol of the development of energy for the whole country.

The Brazilian vocation for hydroelectric energy has been attracting foreign investment since the end of the 19th century, principally along the axis Rio - São Paulo - Minas Gerais. But there were practically no government regulations. In 1934 the country adopted its Code for the Use of Water and the use of hydroelectric energy became a concession regulated by the Federal Government. In the 1940s the first Federal Government along with several State electrical companies were formed but the proposals to unify them on a national basis were never consummated.

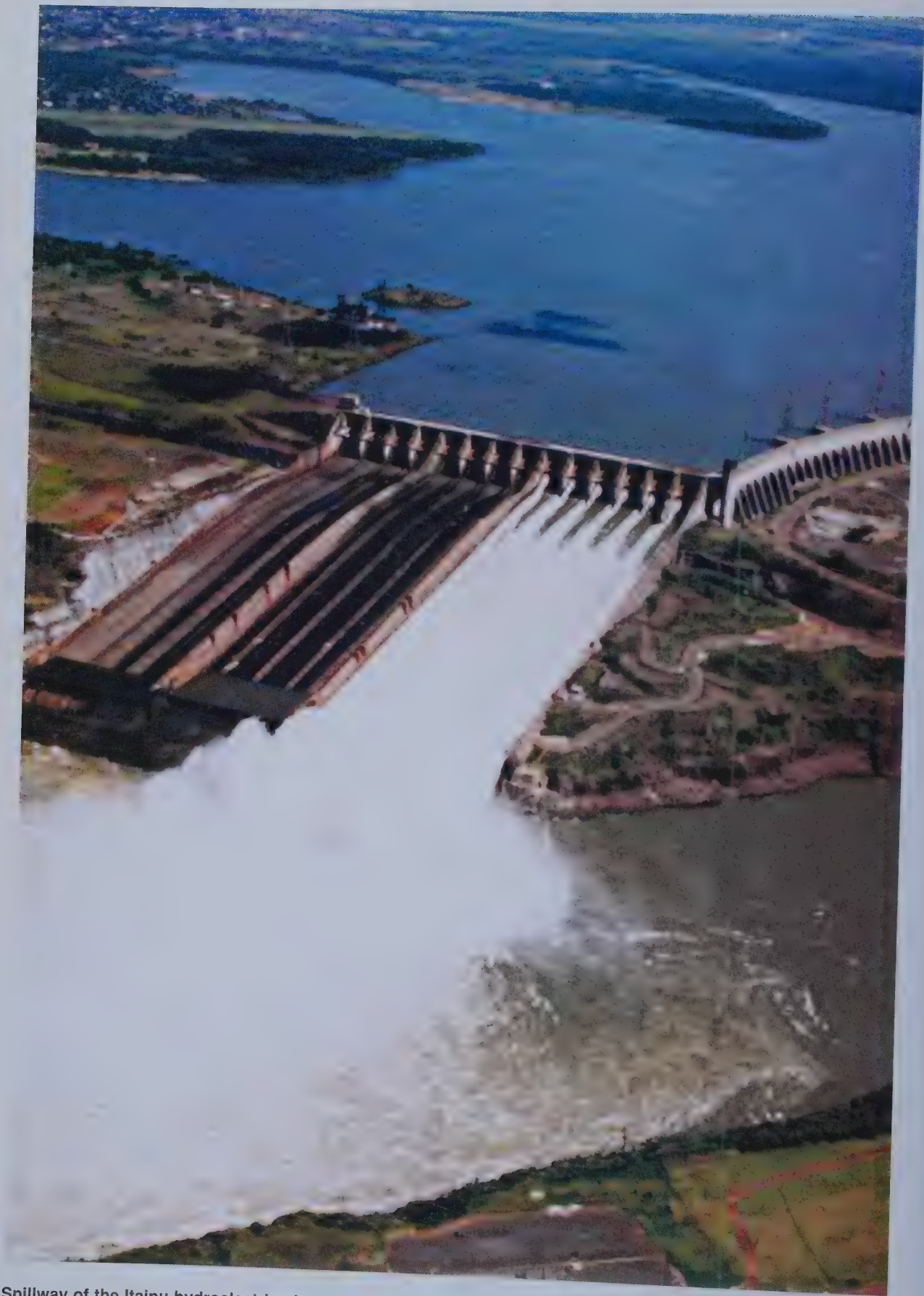
It was only in 1954 that a plant of the size Delmiro had visualized actually went into operation at Paulo Afonso with a capacity for generating 180MW. The Federal Government built it and this one plant doubled the supply of energy for the whole of the Northeast region.

At this time São Paulo could already count on the Henry Bordon plant in Cubatão that had been built by the Light Company, with Canadian capital, and was generating 469MW. All of the other operational plants around the country were considerably smaller but the Center and the South already had sufficient energy to supply emerging industry.

These were plants like the Usina de Mascarenhas de Moraes, on the River Grande, in Minas Gerais, inaugurated in 1957 with a generating capacity of 80MW, and expanded over the following decades to its present capacity of 476MW. Nelson Werneck Sodré, in his book published in 1957 entitled "Introdução à Revolução Brasileira", (an Introduction to the Brazilian Revolution), wrote "the appearance of large hydroelectric plants will result in a larger influx of industries that will lead to competition and to the creation of industrial nuclei that will change the face of urban development".

The foreign energy distributors that remained were only taken over by the State in the 1960s and 1970s a fact that completed the circle of State involvement in the generation of hydroelectric energy, with the exception of a few self-sufficient independent producers. This was the scenario until the mid 1990s. Previously there had been a huge surge in the country's production of electrical energy. Paulo Afonso became operational in 1961, with 480MW, once again placing the Northeast at the forefront of the country's energy production.

The Usina de Três Marias, located at the headwaters of the São Francisco River was inaugurated in 1962 with an installed capacity of 400MW. It was the first reservoir to be built with the intention of also controlling floods. The following year Furnas, on the Rio Grande in Minas Gerais, came into operation and was, at that time, the country's largest facility with 1200MW. Following this we saw the arrival of the Usina do Estreito on the São Paulo side of the Rio Grande with 1050MW, and the Usina do Funil on the Rio de Janeiro side of the Paraíba do Sul River with 210MW and then, in 1971, Paulo Afonso III with 864MW and Jagurá also on the São Paulo side of the Rio Grande with a generating capacity of 400MW.



Spillway of the Itaipu hydroelectric plant built in an alliance with Paraguay and the world's largest engineering project carried out during the 20th century.

The first generator at Ilha Solteira on the Paraná River, in the State of São Paulo, went into operation in 1973. When it became fully operational in 1999 this plant was generating the amazing amount of 3,400MW. Before this, in 1973, the Porto Colômbia plant was inaugurated on the Rio Grande on the border between the states of Minas Gerais and São Paulo with an installed capacity of 320MW. The following year the Ilha Solteira complex was completed with the Jupia plant on the Paraná River in the State of São Paulo with 1,500MW and, that same year, work started on the Volta Grande plant on the São Paulo side of the Rio Grande that would generate 380MW.

In 1975 it was the turn of Marimbondo on the Rio Grande, once again on the state line between Minas and São Paulo, with a capacity of 1,440MW. This same year saw the inauguration of the first large hydroelectric plant in the State of Amazonas - the Paredão on the Araguaia River with 42MW. One year later in 1976 the São Francisco gained another plant just four kilometers up-river from Paulo Afonso. This plant is called Moxotó but officially goes by the name of Apolônio Sales and has a generating capacity of 400MW. In 1977 we saw the inauguration of the Paraibuna plant on the river with the same name in the State of São Paulo with 85MW and in 1978 on the Paranaíba River in the State of Goiás another huge plant called São Simão came on line with 1710MW of capacity.

In 1979, on the Rio São Francisco about 500 kilometers above Paulo Afonso the Sobradinho plant went into action with generating capacity for 1050MW. Its huge reservoir controls the flow of water to all of the hydro installations down-river, namely Xingo, Paulo Afonso, Moxoto and Itaparica. The flow of the river is controlled on a pluvial/annual basis. Also in 1979 one of the largest plants in the Paulo Afonso complex was inaugurated. It was called number IV and had a generating capacity of 2460MW. The following year it was the turn of Itumbiara on the Paranaíba river in the State of Goiás with 2000MW and then, in 1982 the Emborcação plant also started operating on the Paranaíba but in the State of Minas Gerais producing 1200MW.

1984 saw the inauguration of the first really large project in the Amazon, Tucuruí, which, at the time

was the largest in the country and is located on the Tocantins River in the State of Pará. Its generating capacity is 4000MW but it is presently undergoing expansion to raise this volume to 8125MW with conclusion of the work estimated for 2006.

In this same year of 1984 Itaipu came into operation. It is located on the Paraná River, in the State of Paraná and by 1991 it was the world's largest hydroelectric plant with a generating capacity of 12,600MW. It is still not totally operational and by 2004 should be generating 14,000MW. It was the largest engineering feat carried out in the world during the 20th century, although the English and French would like to claim this accolade for the Channel tunnel.

In 1988, the Usina de Itaparica, (today going by the name of Usina Luiz Gonzaga), became operational. It is located just 50 kilometers up-river from the Paulo Afonso complex with 1500MW of generation. Its reservoir was designed to take on extra generators that will increase capacity to 2,500MW. Large new inaugurations only resurfaced as from 1996 when national policy took on a new profile with the issuing of the Law of Public Concessions and the creation of a regulatory agency for the electrical sector, ANEEL, with the acceleration of the privatization process in the sector, and the beginning of the attempts to build a private wholesale market for the sell-through of electrical energy.

At this point the Northeast stretch of the São Francisco that already contained a generating capacity of 7700MW gained, in 1996, the country's third largest hydro plant, the Xingo with 3000MW, a quantity that can be expanded to 5000MW in a second stage that still has to be defined. With the new reality, and in just a few years, the participation of the private sector in the distribution of electrical energy jumped from 2% to 60%. Between 1995 and 2000 the electrical sector received investments of R\$20.8 billion the lion's share coming from the private sector. In 2001, as an icon of this scenario the Serra da Mesa plant on the Tocantins River in Goiás became operational with 1,275MW and is the first to be built by private investment in the post-State era.

It was in this year that the country's generating capacity reached 74,000MW with 66 hydroelectric plants generating more than 100MW's of capacity



The Merluza platform, 100 kilometers from the coast and explored by Petrobras. Brazil produces 80% of the petroleum that it consumes.

each one. The consumption was 56,000MW. In spite of this, the country's excessive dependence on hydroelectric energy that, in turn, depends on rainfall, and lack of investment together with an increase in consumption, caused Brazil to suffer through eight months of a serious rationing process that affected industrial production and changed the day to day habits of the population.

In 2002 the rains returned and finally the Porto Primavera plant was inaugurated. It took over ten years to build, on the Sao Paulo side of the Parana River, and has 1320MW of installed capacity and is projected to reach 1,980MW when fully operational. Apart from doubling the production of Tucuruí, presently under way, the State of Para will see, by 2008, the results of \$3.7 billion of investment in the Belo Monte plant on the River Xingu. It will be the world's third largest hydroelectric facility with 11,182MW of installed capacity.

The point that causes the most concern in this new model for the sector is that generation is often far from the areas of greatest consumption. Apart from this, a large part of the transmission is still under a form of State control that is encountering difficulty in making new investments. Even so, this sector received R\$3.6

billion in investments between 1998 and 2001 and another R\$2.5 billion are under tender during 2002 adding up to 7,200 kilometers of transmission lines that have either already been authorized or are awaiting tender. This includes 1,865 auctioned in August of 2002, and a further 3,209 kilometers expected for tender in 2003. According to Aneel, this will leave a further 10,409 kilometers for tender or authorization up to 2008. These are gigantic numbers that when they become a reality, will flood Brazil's productive sector with electrical energy, apart from preventing the danger of new rationing processes. Of course it will also be leveraging progress.

As this is a sector where investments are only recuperated over the long term and as the return is low if compared to other more immediate alternatives there is a large risk that the government will scare away capital. This happens, for example, every time the government intervenes on behalf of the consumers and resists tariff increases. The solution to offset the deficiencies in terms of distribution that are caused by the great distances involved would be to interconnect the hydrographic basins. The problem is that in a country with the continental dimensions of Brazil,

where the basins are far apart, this task is expensive to say the least. But, in theory, it is easier to transport electricity than water.

It is a geographical irony that the only place for such an interconnection of the three largest basins—those of the Rivers Parana and Prata, of the Rivers Araguaia and Tocantins and the River São Francisco—is Brasília home of the Federal Government. This is where the headwaters are formed acting like a human heart that pumps blood through the veins and arteries to irrigate the brain. Let's hope that this fact also irrigates the brains of our politicians

If Delmiro Gouveia is the symbol of the history of hydroelectricity in Brazil and is seen as a moving force behind industrialization and the search to take development to the interior, then the icon of national independence in the field of fossil fuel energy is the São Paulo writer Monteiro Lobato (1882/1948). Similar to the case of Delmiro, with the failure of his previous business enterprise, Jose Bento Monteiro Lobato linked his name to the development of energy in Brazil. Possessed of a personality capable of contradicting all expectations he was christened Jose Renato but changed his name to José Bento just to be able to use a walking stick that he inherited from his father with the initials J.B.M.L. (Jose Bento Marcondes Lobato).

He had sold the farm that he inherited from his grandfather, the Viscount of Tremembé, and invested all of the family's wealth in a publishing company. This was bankrupted by the energy crisis in the middle of the 1920s and the situation was exacerbated by his rivalry, until he met his end, with no other than the President of the country at that time, Arthur Bernardes. Obstinate and argumentative he spent years fighting with his influential peers trying to convince them of the need to search for oil on Brazilian territory and that this was the only way to turn Brazil into a world power. He did not meet with success. He only went on to find a measure of success writing books for children when he created the characters of the *Sítio do Pica Pau Amarelo* (a kind of *Sesame Street*).

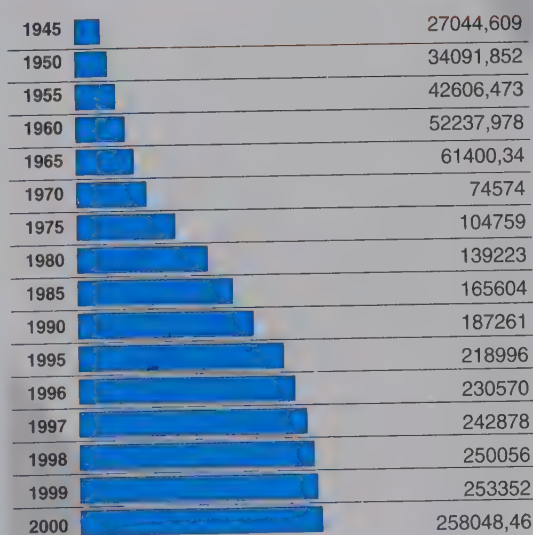
The discovery of oil that could be effectively commercialized only took place in 1939 in a place that was named in his honor and is today known as Lobato, near to Salvador in Bahia. In those days the wells were drilled on land, a situation that lasted until

the 1960s. Today just about all of Brazil's oil is drilled offshore in the waters of the continental shelf

According to some researchers this was not the first time oil was discovered on Brazilian soil. This feat belongs to the Engineer Eugênio Ferreira de Camargo in a place called Bofete in the interior of the State of São Paulo where, in 1892, he found clay impregnated with oily substances. He received help from a Belgian professor in natural sciences and hired prospection equipment in the United States. They drilled a well 488 meters deep that produced a total of two barrels of oil. But the experiment went no further. After finding oil in Bahia, Lobato introduced a campaign with the phrase "the oil belongs to us" and he was joined in this cause by General Leonidas Cardoso, father of Fernando Henrique Cardoso who is presently coming to the end of his presidential mandate.

In 1953 the President at that time, Getulio Vargas, during whose dictatorship Lobato spent three months in prison, created Petrobras and placed the production of petrol under the monopoly of the State. Lobato did not live long enough to become irritated with the frustrations caused by this monopoly. With insufficient funds to attend to the needs of a growing demand for fuel the country opted increasingly for the international market and imported its supply of oil.

Local offer of energy



Source: Ministry of Mines and Energy



Uruguiana Thermoelectric plant (gas-fired), in Rio Grande do Sul.

The oil crisis that exploded 20 years later caught Brazil with an enormous commercial deficit mainly due to its petroleum accounts. The first cracks started appearing in the monopoly when risk contracts were signed allowing foreign companies to invest in drilling on national territory. The improvement in Petrobras investments over the subsequent decades helped immensely to alleviate Brazil's commercial trade balance but it was still not enough to solve the problem. It took until the XXI century for the monopoly to be dismantled once and for all.

The country was even slower to wake up to natural gas. Apart from being a cheaper source of energy it is also less polluting than the generation of electricity from petroleum derivatives. Until then the history of thermoelectricity in Brazil was limited to a few isolated facts such as the facility that the Fiat Lux Company built in Porto Alegre in 1887, and the Piratininga plant belonging to Light that was the country's first large thermoelectric unit and was inaugurated in the city of São Paulo in 1954.

Then came the Jorge Lacerda plant belonging to Eletrosul that started operating in Santa Catarina in 1965, Bongi belonging to Chesf inaugurated in Pernambuco in 1975 with 14.2MW, and Camaçari,

in Bahia, that has been generating 292.5MW since 1980. In favor of gas are the considerable technical advances developed over the last two decades that permit doubling results for producing electrical energy and these have made thermoelectric energy economically feasible. With this new gas technology the disadvantages that thermoelectric generation held in comparison with hydroelectric sources were greatly reduced.

It also became possible to build a small plant relatively close to the target market whereas the availability of water to supply the hydroelectric plants is becoming more and more distant with every new project that is implemented, as they are basically migrating to the Amazon. Another large illusion was evident when projects for the thermal plants started sprouting all over the country. It was thought that dozens of thermoelectric plants would act like a magic wand and solve the problems of scarcity and the need for rationing in 2001.

Apart from being investments that have a relatively fast start-up cycle, if compared with hydroelectric generation that has to be planned on a case by case basis and demands long periods of construction time, insufficient

Generating plants and power transmission lines



Source: ONS- National Operator for the Electric System

attention was paid to creating a private electrical energy market that would attract the necessary financial resources. The creation of the private market began in 1998 and in terms of an incentive for attracting capital it should be remembered that this sort of market trading is even a recent occurrence in the United States where the model has been functioning for only two decades. So its not hard to imagine the difficulties of implanting something similar in a country like Brazil where the charter for capitalism was written without paying heed to a number of fundamental points.

Even considering these difficulties it is clear that the tendency is to reduce dependence on hydroelectricity and grow the participation of thermal energy fueled by natural gas, including the conversion of the existing plants being fueled by oil and with the additional gains in regards to the environment. The initial fundamental investment for increasing the offer of gas to regions where demand could grow quickly has already been made. This is the Brazil-Bolivia gas pipeline that called for investments of \$2 billion.

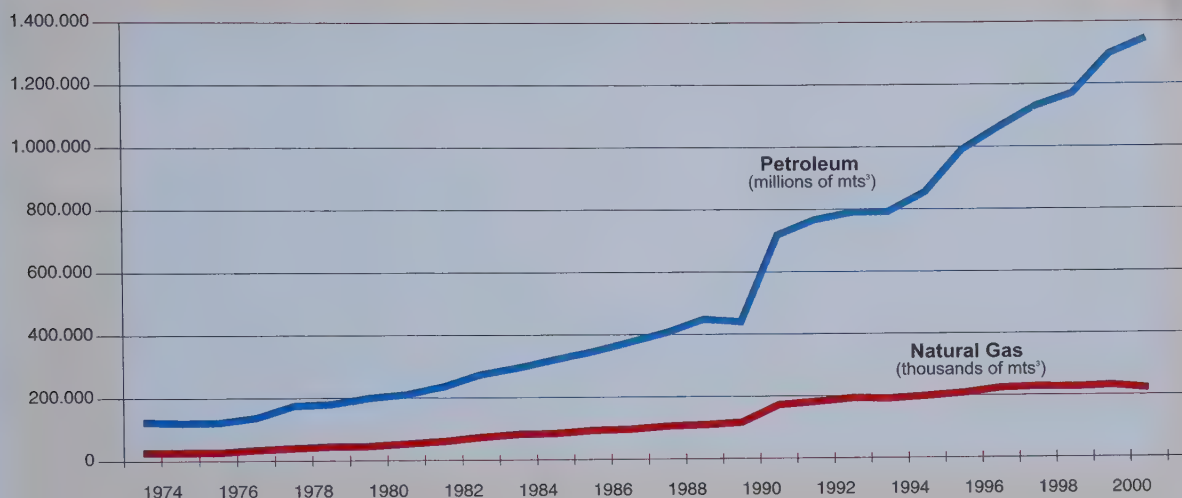
At the same time the offer of gas is being expanded at the other end of the country with the construction of the Coari/Manaus pipeline with an extension of 420 kilometers and investments of \$275 million that will exploit the gigantic reserves in Urucu in the very heart of the Amazon. The Committee for Managing the Energy Crisis calculates that an additional 21,130MWs will be added to the system between 2002 and 2004 taking into consideration gas-fired thermoelectric plants, hydroelectric plants, alternative energy sources and link-ups to import electricity from neighboring countries, (this includes the purchase of a parcel of excess energy belonging to Paraguay and generated at Itaipu).

In this projection the new thermo-electric plants will add another 8,087MW to the national grid over this period. The private sector is less optimistic and believes that the thermal electricity coming on line between 2002 and 2004 will only contribute a further 5,497MW, this according to statistics prepared by the Brazilian Association for Infrastructure and Base Industries (Abdib). It is a fact that the thermoelectric program is advancing at a rhythm far slower than



Angra-2 nuclear plant, in Angra dos Reis, on the coast of the State of Rio de Janeiro.

Evolution of Oil and Gas Reserves



	Petroleum	Gas		Petroleum	Gas		Petroleum	Gas		Petroleum	Gas
1973	123060	25863	1980	209540	52544	1987	405538	105343	1994	854468	198761
1974	119780	26261	1981	234640	60287	1988	447730	108900	1995	989385	207964
1975	120730	25936	1982	273210	72334	1989	438779	116008	1996	1062143	223562
1976	135900	34135	1983	294100	81606	1990	717516	172018	1997	1129755	227650
1977	173940	39455	1984	320520	83892	1991	766055	181523	1998	1169710	225944
1978	178970	44389	1985	344694	92734	1992	789490	192534	1999	1296273	231233
1979	198420	45082	1986	374958	95834	1993	792100	191071	2000	1345746	220999

Source: Ministry of Mines and Energy

was expected a few years ago.

But even in the most pessimistic hypotheses the impact of gas on the national energy matrix, that until 1998 was limited to 2.7% compared to 38% from hydroelectricity and 34% from petroleum, should attain a participation of 10% by 2005. According to the Ministry of Mines and Energy, of the 56 gas-fired thermoelectric plants planned to be operating by 2003, 15 of them that could contribute with an extra 2900MW have already been guaranteed a supply of gas to encourage the investors to bring them on line by the end of 2002.

Gas also has another facet that is growing rapidly. This is as a source for automobile energy. The number of service stations licensed to supply this fuel for vehicles, including private automobiles, is growing. The cars undergo a modification of the engine and can then take advantage of the lower price of gas with the additional benefit that it is less polluting.

Along the same lines, and taking advantage of the fact that Brazil is the world's largest producer of sugar cane and alcohol, the country has already

developed sophisticated technology for substituting petroleum derivatives with alcohol as fuel for the automobile sector. A great success, after the second oil crisis at the end of the seventies, these alternatives were becoming obsolete but they are coming back into evidence and the automobile makers are once again manufacturing alcohol-fueled cars and expect they will soon be able to produce a vehicle that will adapt automatically to either alcohol or gasoline. The estimates of investments for the production of alcohol are being rapidly revised upwards.

Additionally, the sugar and alcohol industry generates large volumes of biomass residuals that help the sugar producers to become self-sufficient for their energy needs and some are already selling the excess energy on the free market. The national potential for using this energy is estimated at around 5200MW with the added advantage of combining the offer of this product with that of hydroelectric energy because the largest availability of the biomass raw material occurs during the dry season.

Coal and wood, as sources of energy, still

THE 20 LARGEST INVESTMENTS MADE IN ELECTRICAL ENERGY IN 2002

PROJECT	AMOUNT (US\$ MILLION)	INVESTORS	LOCATION
Construction of a hydro-electric plant on the Tocantins River between Aguiarnópolis (TO), Palmeiras do Tocantins (TO) and Estreito (MA)	1.500,00	Alcoa, BH Billiton, CVRD e Tractebel Energia	Various states
Construction of an oil pipeline, 725 kilometers in length, of which 610 kilometers are on land and 115 are under water.	1.000,00	Petrobras	Various states
Construction of a thermo-electric plant in the municipality of Varginha (MG)	600,00	ABB Alstom Power, Cemig, Petrobras e Texaco	Minas Gerais
Construction of a thermo-electric plant in Japeri in the interior of the State of Rio de Janeiro.	400,00	Duke Energy	Rio de Janeiro
Construction of a facility in Tres Lagoas (MS)	250,00	Petrobras	Mato Grosso do Sul
Construction of two air-generation complexes, (Wind powered), on the southern coast of Rio Grande do Sul.	250,00	Elebras Projetos	Rio Grande do Sul
Installation of a thermo-electric plant in Sete Lagoas (MG)	181,80	Cummins Power Generation	Minas Gerais
Installation of a thermo-electric plant between the states of Goiás and Tocantins.	176,60	Tractebel Energia	Tocantins
Construction of water powered energy facilities in waterfalls located in the states of Mato Grosso and Goiás together with the construction of small hydro plants. (PCHs)	150,00	Brascan Energetica S. A.	Various states
Serra da Mesa (GO) - Bom Jesus da Lapa (BA) - Gov. Mangabeira (BA) Transmission Line, that will be 1.050 km in length	138,80	TSN	Various states
Construction and operation of a facility in Rio Verde, between the municipalities of Cacu e Itaruma (GO)	104,60	Triunfo Partic e Invest	Goiás
Construction of the transmission lines from Banabuiú (CE) to Natal (RN) to reinforce the North/North-east grid.	84,80	Chesf	Various states
Installation of nine plants with 82 diesel-fired generators in metropolitan Fortaleza.	83,00	Grupo HLC e Servtec	Ceará
Installation of a wind-power nucleus in the municipality of Arraial do Cabo in the interior of the state of Rio de Janeiro.	80,00	SIIF Energies do Brasil	Rio de Janeiro
Technical improvements of the Mascarenha de Moraes Hydro-electric plant. (originally called Peixoto)	72,60	Furnas	Minas Gerais
Implantation of a thermo-electric facility in the municipality of Rio Largo (AL)	70,00	Bozano, Simonsen, MPE e Soenergy	Alagoas
Construction of the hydro-electric plant at Monjolinho in Rio Grande do Sul	66,10	Governo Federal	Rio Grande do Sul
Construction of a hydro-electric plant in Rio Claro (GO), between the municipalities of Cacu and Cachoeira Alta	63,30	Alcan Alumínio-Origem: Canadá-Capital: Estrangeiro	Goiás
Construction of a hydro-electric plant on the Suacui-Grande river in the municipalities of Pecanha and São Pedro de Suacui (MG)	60,00	Alcan Aluminium	Minas Gerais
Construction of a hydro-electric facility on the Rio Verde, in the municipality of Ribas do Rio Pardo (MS)	58,30	Empreendimentos Master	Mato Grosso do Sul



Delmiro Gouveia.

held a participation of 35% up to the seventies. This dropped to 19% in the eighties, 15% in 1998 and the projection for 2002 is that they will not represent more than 12% of the energy matrix. It is an inexpressive segment in terms of investment. Coal, that is one of the most used fuels in other parts of the world, plays an insignificant role in the energy picture and is restricted to a small area of the country mostly due to its scarcity and poor quality. The coal used for the steel business is imported but is also showing a decline in investments.

The energy question has another alternative that continues to be very controversial and public opinion regarding this source changes as the decades pass. We are talking about nuclear energy that is making something of a comeback. It is competitive price-wise but is not trusted because of the environmental damage it has caused. Brazil has the world's sixth largest reserves of uranium. The Angra I nuclear power plant has been operating since 1982 with capacity for 650MW and Angra II that eventually became operational in 2000 produces 1300MW. This is a government project with extremely high costs - \$20 billion. It was started in the seventies but

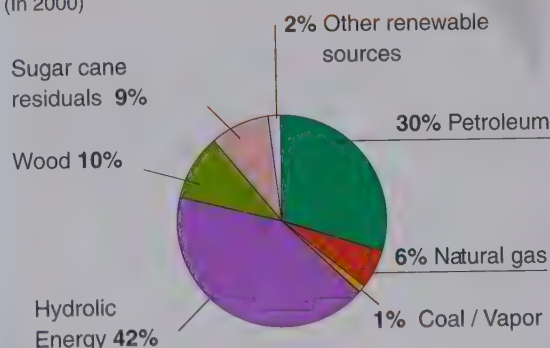
work was paralyzed after the equipment was imported from Germany to build Angra III. The supplier was the same and the plant will be the same size as Angra II.

There is a futuristic and excellent alternative to these challenges due to the fact that it is essentially clean energy, is found in abundance, is inexhaustible and available in many different places. This is wind power. The techniques for capturing the force of the wind have come a long way since the days of the windmills that drove Don Quixote crazy and have recently become a new source of hope for mankind. Winds have already done a marvelous job in terms of maritime transport. The development of techniques for harnessing the wind was responsible for the ocean voyages that resulted in the European occupation of the American continent. But with the invention of the steam engine wind lost its importance.

The picture changed with the oil crisis of the seventies. Since then over 30 thousand large-scale wind turbines have been installed around the world generating a total of 13,500MW. Brazil has already researched its potential and the surprising conclusion is 143,500MW of potential power. The federal government has set targets to install an emergency program to generate 1050MW of wind power by 2003. The new turbines, developed in Europe, are combined with windmills fitted with three narrow aerodynamic blades that are 44 meters in diameter and capable

Production of Primary Energy

(In 2000)



Source: Ministry of Mines and Energy

Main Gas Pipelines in Brazil.....



of producing up to 300MW. Believing in Brazil's potential the Wobben Windpower Company, the world's largest manufacturer of turbines and blades, has set up a factory in Sorocaba (SP).

The first Brazilian experiment for generating wind power has been operating since 1992 on the island of Fernando de Noronha producing a mere 75 kilowatts. Today, there are six wind plants in operation located in the States of Ceara, Pernambuco, Minas Gerais and Parana that are generating a total of 20MW or 0.03% of the whole amount of electrical energy generated in Brazil. Ceara is the State with the most advanced project and has already obtained authorization from Aneel to build five units by 2004 that will add 500MW to the grid. This represents 4% of the State's needs. The drawback with this technology is its high cost, far greater than the hydroelectric and gas-fired thermoelectric plants.

Another alternative that has been well researched from a technical point of view but is still having trouble achieving competitiveness is solar power. These are photovoltaic silicon cells that transform sunlight into electrical energy in the same way that portable calculators are powered. It is the same energy source used in artificial satellites. These cells take the opposite energy route from a light bulb that transforms electricity into light and they should not be confused with solar heaters that are based on plaques that use the warmth of the sun to heat household water but cannot take advantage of the benefits of transport and conversion that are the normal characteristics of electrical energy.

Brazil has experimental laboratories for only the second modality. The photovoltaic cells, due to their cost, are not feasible except in places of difficult access for installing poles and for transmitting electric energy through metal wires, such as rural properties or those in mountainous regions. With more than 8000 kilometers of coastline Brazil is a natural candidate for harnessing energy from the sea, but the mechanisms being researched around the world have not yet attracted investments although patents are already being taken out.

Researchers are studying how waves can be used to power turbines, the difference in the level of the tides and also the difference in temperature of

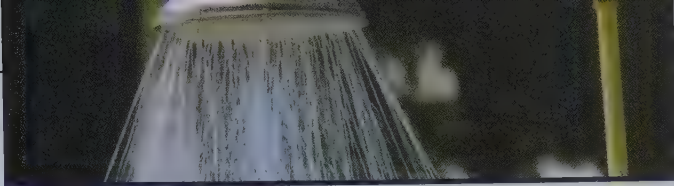
surface seawater compared to that at greater depths. Closer to a solution, but still being researched is the use of hydrogen as a source of energy. It is an element of nature that is capable of producing energy without harming the environment. This could be a mid-term solution, two decades away, perhaps

In this case the fuel is extracted from water, an abundant source, and combined with oxygen taken from the air that is also an abundant source and it generates energy, liberates heat, and the end product that the process generates is pure water.

This energy of our dreams is captured from the water, and the air, and the process generates water and energy. There are two ways of developing this source that are presently being studied: electrolysis is one and using combustible cells is the other. The researchers are looking for ways to store the energy in small spaces so that it could be used, for example, in powering automobiles. Still in the field of alternative dreams and one of the most exciting issues for scientists is nuclear fission, a controlled repetition that happens on the sun and in the stars. There are some very serious studies being carried out on this matter in developed nations but no firm results are expected for a number of generations.

Coming back to the Brazil of today and appreciating that the present economical environment is causing people to become bankrupt, and considering history's insistence on repeating itself, it should not be a surprise to find talented people who are forced to change their accustomed business interests or entrepreneurs that are passionate, obstinate, brilliant and dreamers like Delmiro and Lobato. Maybe someone, right at this moment, has a vision of what it takes to find an innovating and fantastic idea for developing new sources of energy. What will this source of energy be like? Only visionaries, pioneers and entrepreneurs like Delmiro and Lobato could say. One thing, however, is true and undeniable: Brazil is blessed by equatorial and tropical sunshine, and by the waters of rivers and the sea. These are the same seas from which the country's first visitors disembarked.





Clear legislation, clean water

On opening the tap of her kitchen sink in the early morning of the 5th of July, Luiza Batista da Silva, who lives in Nova Brasília Street, in the Japiinlândia neighborhood, in Manaus, had a surprise. Used to finding muddy water spewing out that looked like weak coffee, for a few moments she could not believe her eyes. The water pouring from the tap was crystal clear and that was the way it stayed day in day out until she finally got used to this amazing change. It took Luiza a few days to find out what was going on according to *Gazeta Mercantil's* Manaus correspondent, Wilson Nogueira. The people responsible for cleaning up the water that flows from the taps of Manaus, a city with 1.5 million inhabitants, are the workers at Ondeo Services, owner of Águas da Amazônia (Waters of the Amazon), a company that three years ago bought the concession for servicing basic sanitation in Manaus. Belonging to the Suez group (Belgian/French), that is a world giant in energy and sanitation, Ondeo started operating in Manaus determined to transform the local water and sewage systems into a sort of shop window of its competence in the sector, something that would be a visiting card for the rest of the country and also for neighboring countries like Peru and Venezuela.

Ondeo brought in technology from Finland and invested R\$20 million in the implantation of just one water treatment plant that was intended to eliminate the dark and murky aspect of the waters of the River Negro that flows through Manaus. It produced the results that the company had planned for. The appearance and quality of the water coming out of the taps improved almost overnight. A reduction in the traditional bad debt relating to water bills in Manaus can already be seen and there has also been an increase in the demand for treated water from a number of companies that have decided to close down their artesian wells and join the distribution system.

In eight to ten years time, Ondeo's arrival in Manaus could be one of the paradigms for anyone interested in studying the history of basic sanitation in Brazil. International companies, like Ondeo, and local ones like Aguas do Brasil, a consortium formed by the Rio de Janeiro company Cowan, EIT, Queiroz Galvao e Developer that won the concession for eight municipalities in the State of Rio, -Niteroi, Campos, Petropolis, Saquarema and Paranaguá in the State of Parana can be listed. They are working to burst the bubble in the system caused by the lack of regulatory benchmarks and by the quasi-bankruptcy of the hundreds of companies and

State authorities that have been responsible for this activity over the past years. At the present moment, there are 43 private companies operating in Brazil's public sanitation sector. They are currently supplying services to about 6 million inhabitants in a number of different municipalities. Almost all of them are determined to expand their operations and are anxiously awaiting clearer definitions of the regulations, an issue that the National Congress deferred until 2003 when it postponed the vote on Law number 4,147/01 presented by the Executive Office back in 2001.

Public sanitation in Brazil will depend, as from now, on both the input of private investment and also the technical experience of the large global operators in this sector such as Ondeo and Vivendi. Another requirement is that the incoming government, that will take office in January, considers this sector amongst its indispensable priorities in order to catch up on the delay and accelerate the most decisive phases during the first decade of this new century. During the electoral campaigns nothing indicated paralysis or regression. All the candidates running for office declared that they are aware of information released years ago by the World Bank and supported by health and environment specialists all over the country that for every dollar



The waters of the Rio Negro, in Manaus, emerge crystal clear from the showers after going through a thorough treatment process



Partial View of the system for capturing water from river Negro, in Manaus (AM).

invested in public sanitation there is a saving of \$2.5 in health care. Thus, it is hard to believe that the new government will not treat sanitation with the importance it deserves.

The solutions are as clear as the water that now flows from the taps in Manaus: an urgent definition of the regulatory benchmarks is needed because, at the moment, there are no clear rules for establishing prices for the supply of water or the collection of sewage. The companies and authorities running the system have been responsible for the creation of what can only be called a "tax monster" where, for example, 10 cubic meters of treated water supplied to a private residence could cost anything from R\$2.00 to R\$30.00 - there are no standards or limits. Just as important is a definition of ownership on the part of the conceding power of the services whether they are State governments or municipalities. Lack of definition in this field is holding back progress in the sector especially in metropolitan areas where State capitals don't want to give up their power of being the conceding body. In the State of Paraná, for example, in order to be able to work on a State level, Sanepar, the State

sanitation company, that is now a public company counting with the participation of various private companies, had to buy the concession from the Curitiba City Hall.

Systems for financing in this sector have made progress despite the precarious financial state of hundreds of companies and authorities, (State authorities), involved in this activity and that are presently in debt to the tune of R\$25 billion, or twice the amount of the revenues of the whole sector that come to some R\$10 to R\$12 billion per year. The banks, Caixa Econômica Federal and Banco de Desenvolvimento Social (BNDES), are the two largest financiers of public sanitation. BNDES, for example, has invested R\$1.5 billion in the sector just this year. It has also stated that this amount will grow, year by year, until 2005, when it is expected that the bank will have R\$3.5 billion available for investment in sanitation and urban public transport. What the entities involved in the sector are concerned about, right now, is whether the new government will maintain sanitation on its list of priorities and that it does not sidetrack this funding to other ends.

The arrival of more private companies should

bestow a new dynamism to a sector that is currently spinning its wheels and is dependant on the State companies that have managed to survive. Needless to say there are not many of them. No more than ten according to specialists. The most important thing is that companies such as the giants, Companhia de Saneamento Basico do Estado de Sao Paulo, (the State of Sao Paulo Sanitation Company), Companhia de Saneamento do Parana (the State of Paraná Sanitation Company), Companhia de Água e Esgotos de Brasília (the Water and Sewage Company of Brasília), Companhia de Saneamento de Minas Gerais (the Minas Gerais Sanitation Company), Companhia de Saneamento de Campinas (the Campinas Sanitation Company), amongst others, escaped from their straight-jackets thanks to the Fiscal Responsibility Law that managed to separate state companies between dependents (those requiring government funding) and the independents. Based on this initiative, a number of independent State sanitation companies succeeded in re-encountering their place in the financial system and began to reinvest. In the case of the Sao Paulo company, (SABESP), even something unexpected occurred, this being that the BNDES contacted the company with a proposal for credit lines and joint ventures at a time when large investments were needed for its bold project for recovering the riverbeds of the Tietê River.

If the money available in State development banks was added to investments from the private sector, together with the revenues that could be obtained for the use of water, something that is already being implemented in some river basins such as the Paraíba, (MG, SP and RJ), perhaps there will not be a lack of resources for sanitation over the next few years. Even considering that this challenge will require the large investments that all the entities involved in the sector are unanimous in stating: The executive vice-president of the Brazilian Association for Infra-Structure in Basic Industries, (ABIDE), Halph Lima Terra, for example, thinks it is vital that Brazil invests at least \$40 billion in sanitation over the next five years, not just to reach the target of service compatibility targeted for 2010, because "this is already out of the question" but to make significant improvements in the logistics of the sector, "some of which can only be called disgraceful". On the

national average, according to ABIDE, Brazil counts with between 65 and 70% of serviced water supply in urban areas but only 15 to 20% of the sewage is treated. So it is understandable that Halph Lima Terra defends a position that the main part of the R\$40 billion investment be allocated to treatment: "For the simple reason, he says, that if there is no treatment of waste, what's the point in investing in collection? In other words, why are we moving waste from one place to another if it is just going to end up in our water resources"?

Freed of its fetters, public sanitation has its attractions. Compact companies that are well managed can achieve returns well over 10%. In a worst-case scenario the return on capital will occur in less than ten years. Marcos Botter who presided the Brazilian Association for the Concessionaires of Public Services for Water and Sewage (ABCON), for six years, believes it is a reasonable assumption that the sector, once it carries out improvements in sewage disposal, should accumulate revenues, mostly from tariffs, of around R\$17 billion. He says that what is needed is a considerable reduction in wastage (40% is the national average) of treated water and this includes a large number of illegal connections and an expressive amount of bad debt. That is why it makes sense to observe Odeco Services and its activities in Manaus.

Odeco, according to its president Newton de Lima Azevedo, has invested close to R\$400 million in Manaus. Almost half of this money (R\$193 million) was spent on the acquisition of the concession from Cosama, the Sanitation Company of the Amazon. Accustomed to the challenges of the sanitation business, the company does not lose heart because of problems that it encounters along the way. The contractual commitment is to invest R\$600 million over the 30-year concession, (operations started up in 2000). 50% of the whole population of the Amazon region, that has a mere 62 municipalities, can be found in Manaus. In terms of sanitation the only advantage that the company can count on is the abundance of water in the Rio Negro, "anything else is hard going" says Newton de Lima Azevedo. First of all, he is referring to a wastage factor of 70% that is a national record. There are several ways to interpret this information but, from the point of view of the operator that is



The head waters of river Sao Francisco, at the Canastra mountain range, in Minas Gerais. The Sao Francisco is known as the national river of integration .

attempting to make its operations feasible, the most realistic is that Ondeo Services is receiving no remuneration for 70% of the water that it is capturing, treating and distributing for the inhabitants of Manaus. There are still 30 thousand illegal connections in the city, which represents a huge number of people who still think that water is a divine right and therefore they should not have to pay for it", says Lima Azevedo.

Leaks in the distribution system add to the statistics: the 370 kilometers of pipelines that comprise the distribution system need to be repaired. A greater challenge, however, lies in the collection of waste, a service that only exists in the central parts of the city. Almost the whole of Manaus is still discarding its waste into streams that flow into the Rio Negro below the capture points. More than 2000 kilometers of sewage pipelines - a distance greater than Porto Alegre, in Rio Grande do Sul, to Vitória, in the State of Espírito Santo - are needed for the company to achieve its objective of treating 90% of the waste produced by Manaus before the end of the concession in 2028. Ondeo is determined to press ahead with its mission. At the moment it is starting to reap the benefits of its success in cleaning up the waters of the Rio Negro. It is witnessing a slow but steady drop in the high rate of unpaid debt. Wilson Nogueira, a reporter in Manaus, interviewed local people affected by the changes in the quality of the water and most of the replies were favorable in regards to the new service.

Izídio Soares Farias, who lives in the borough of Petrópolis, in the southern part of Manaus, decided to close down his artesian well and migrate to the integrated system after seeing the purity of the water coming out of the taps of his house. He didn't make the change yet. Not quite sure of the outcome, the other members of the family opted to wait a while before taking the decision. "It's a normal reaction", declared the ever patient Lima Azevedo. Luiza Batista da Silva, in Japiilândia, is still telling her story to everybody who will listen, about the day her life changed. "The water has been clear for more than a month. Before, it came out of the tap looking like rust. To wash white clothes I used to fill a tank and wait from one day to the next for the water to decant. If I used water straight from the tap, instead of cleaning the clothes they would

end up dirtier. Things have improved a lot because now we can wear clothes washed in tap water without having to worry about anything".

Ondeo Services' other concession is in Limeira, a city with 250 thousand inhabitants in the State of São Paulo. One of the few coincidences linking Manaus to Limeira in terms of basic sanitation is the enormous shortfall in treating sewage, (presently only 8%), something that the company will be working to revert within this decade. The target is to have 100% of Limeira's sewage system treated by 2009. The company is prepared to invest R\$35 million over the next five years in improving services across the board. The city already has a combined scheme for treated water and collection of waste. Ondeo, that has been the concessionaire in Limeira for the last five years, was the first private operator to take part in the overall system. But the company paid a price for its pioneer spirit: it took more than three years to settle its business with the City Hall. In order to get to this point the company had to take over a debt left by the old Serviço Autônomo de Água e Esgoto (Autonomous Service for Water and Sewage). It is also paying a monthly percentage of its revenues to the municipal authorities pursuant to a contract signed with the local authorities. Under the terms of this agreement the local City Authorities have no rights to legally suspend the concession. The company is already distributing surveys that demonstrate that its operations are widely approved by local residents.

Newton Lima de Azevedo reminds us that, "the overall reality in Brazil is much closer to Manaus than it is to Limeira". What he means by this is that the challenges awaiting the operators in most of the regions of the country "are enormous". In his opinion, operations of public sanitation in Brazil should be left to companies that "know what they are doing". Based on what has been learned in Manaus, Azevedo affirms that the operators will need to stimulate, in their concession areas, something akin to a "cultural revolution". He goes on to say "month after month, we have been getting the population to meet with us to discuss how important sanitation is for public health, the problem of squatters, clandestine occupations, the use of the ground, the drainage of rain water etc. etc. etc. These are issues regarding the quality of urban life that

affect the citizen's rights. We are making a lot of progress in Manaus. It is an exhausting project, but one that is worthwhile, especially when you see the people perceiving the importance of treated water and even the importance of personal hygiene and preservation of the environment".

Marcos Botter, who was president of ABCON for six years, (last August he handed over his post to Fernando Mangabeira Albernaz), believes that there is still a great amount of work to be done in order to raise public consciousness in regards to the importance of basic sanitation.

"We have achieved a lot over these last six years at ABCON, but I have to confess that I left the presidency somewhat frustrated because the vision of Brazilian society in regards to the problems has still not sunk in. The large majority of the community is unaware that lack of sanitation is the principal cause of thousands and thousands of hospitalizations, be they because of diarrhea, cholera or worms. And that every penny spent in sanitation generates amazing savings in terms of health care".

Published in March, the National Survey on Basic Sanitation (PNSB), carried out by the Brazilian Institute for Geography and Statistics (IBGE), supports Marcos Botter's concerns to a

certain extent. Brazil's progress in this sector, even in terms of treated water, has been timid to say the least. Almost 30% of homes in the Southeast of the country still do not have treated water. And in the northern region of the country this percentage rises to 56%. 53% of the homes in the Southeast possess sewage drains, but in the North this number drops to 2.4%, and to 14.7% in the Northeast. Brazil, and still referring to the PSNB report, has 10 municipalities with no sanitation whatsoever, five of which are in the Northeast (Maranhao), three in the North (two in the State of Pará and one in Rondônia), and the other two are located in the South, one in Santa Catarina and the other in Rio Grande do Sul.

The survey shows, very clearly, that the target set by the government in 1998 to standardize the services for water and sanitation by 2010 hasn't a chance of succeeding. The few advances that have been made over the past few years are related to the treatment of water, a benefit that can be found in the majority of Brazilian towns. Between 1989, the year the IBGE carried out its first survey on sanitation, and 2002 the advances in treated water can be seen region by region: the North progressed from 86.9% (municipalities benefited



Partial view of the town of Limeira, in the interior of the State of Sao Paulo, where the public water service is private.



Water treatment plant in Manaus, the most modern system used in Brazil.

by this service) to 94%; the Midwest went from 92.8% to 98%; the South from 97.3% to 98.5%; and the Southeast from 99.9% to 100%. The distribution of treated water reached an average of 260 liters per person per day in the year 2000, compared to 200 liters in 1989. In the Southeast the average is 360 liters per person per day whilst in the Northeast the average remains at 170 liters.

The same survey revealed that progress in the collection of waste has been timid, to say the least. In 1989, Brazil had 4,425 municipalities, and only 47.3% could boast sewage collection. Over the following eleven years the number of municipalities rose to 5,507, but the percentage of those with some sort of disposal system remained at 52.2%, or almost the same found in 1989. The largest number of municipalities with no collection system can be found in the Northeast: they represent 92.8% of the total. The statistics for the region are also unfavorable: 61.1% of the municipalities of this region have no type of collection service. The same survey revealed that, between 1989 and 2002, there was an increase of 77.4% in the treatment of sewage collected all across the country. This could appear to be a remarkable advance but it's not. The country

simply went from an index that was virtually zero, eleven years ago, and has stagnated at an index of 15%, something that can only be considered "disgraceful" in the eyes of the sector.

Sewage treatment leads to an even greater problem which is the preservation of the spring water that assures the supply of fresh water for residential and industrial consumption. It can be asserted, today, that industry is no longer the perpetrator of the contamination of spring water because, at least in the more advanced regions of the country, it has taken large steps in terms of the environment and the recycling of water. The brunt of the responsibility lies with the municipalities and their urban waste and a huge delay in the last phase of sanitation, which is the treatment of sewage. It is a very worrying picture and will become even more so if the country does not overcome, next year, this inertia relating to basic sanitation and the programs for the administration of water. There are already some alarming signs pointing to dramatic consequences in terms of the supply of water in some regions. Greater São Paulo, the industrial heartland of the whole country, is just one example. Last year, during the prolonged dry season, the city almost ran out of water to supply the

more densely populated areas that are inhabited by millions of people.

Luckily, Sabesp had prepared itself by expanding its capture potential in two of the supply areas and knew how to administrate the system to avoid more severe rationing. Considering the interdependence of the sources for capturing water a supply crisis in São Paulo could affect municipalities in a hundred kilometer radius that contain more than 20 million inhabitants. In the Campinas region, in the interior of the State, during the dry months and for at least a 60-day period there is an imbalance between supply and demand, and the servicing of several neighborhoods crucially depends on storage capacity. The Campinas region is supplied by the rivers that flow from the Cantareira System, that is a source shared with metropolitan São Paulo where it provides water to 12 million people. The problem is not really one of availability of water, it is more a question of management. Studies carried out by the University of Campinas prove that there is an excess of water during ten months of the year meaning that the solution to the problem lies in expanding the reservoir facilities. Apart from this, it is also a very relevant fact that the rivers that flow through the Cantareira system are inundated by a huge amount of waste collected by the municipalities along the way where the treatment, with the exception of Jundiaí that treats 100% of its waste, is either around the national average or, as in the case of Campinas with its one million inhabitants, far below it.

Due to problems that can only be explained by geology, the Campinas region is surrounded by areas that are fairly abundant in fresh water. Some industries to the right of the Anhangueira highway heading inland had to relocate some of their production lines from the region because the artesian wells were under-producing. At the same time, further down the road beyond Campinas, in the municipalities of the Mogiana region, (Jaguaruna, Mogi Guaçu, Mogi Mirim), there are neither complaints, nor problems: geology was kinder to industrial development and provided artesian wells that were far more productive. Mayors with a broader vision of environmental matters are also instrumental in solving the problems. In Vinhedo, a town of 55,000 inhabitants near to Campinas, mayor Milton Serafim came up with the mind-

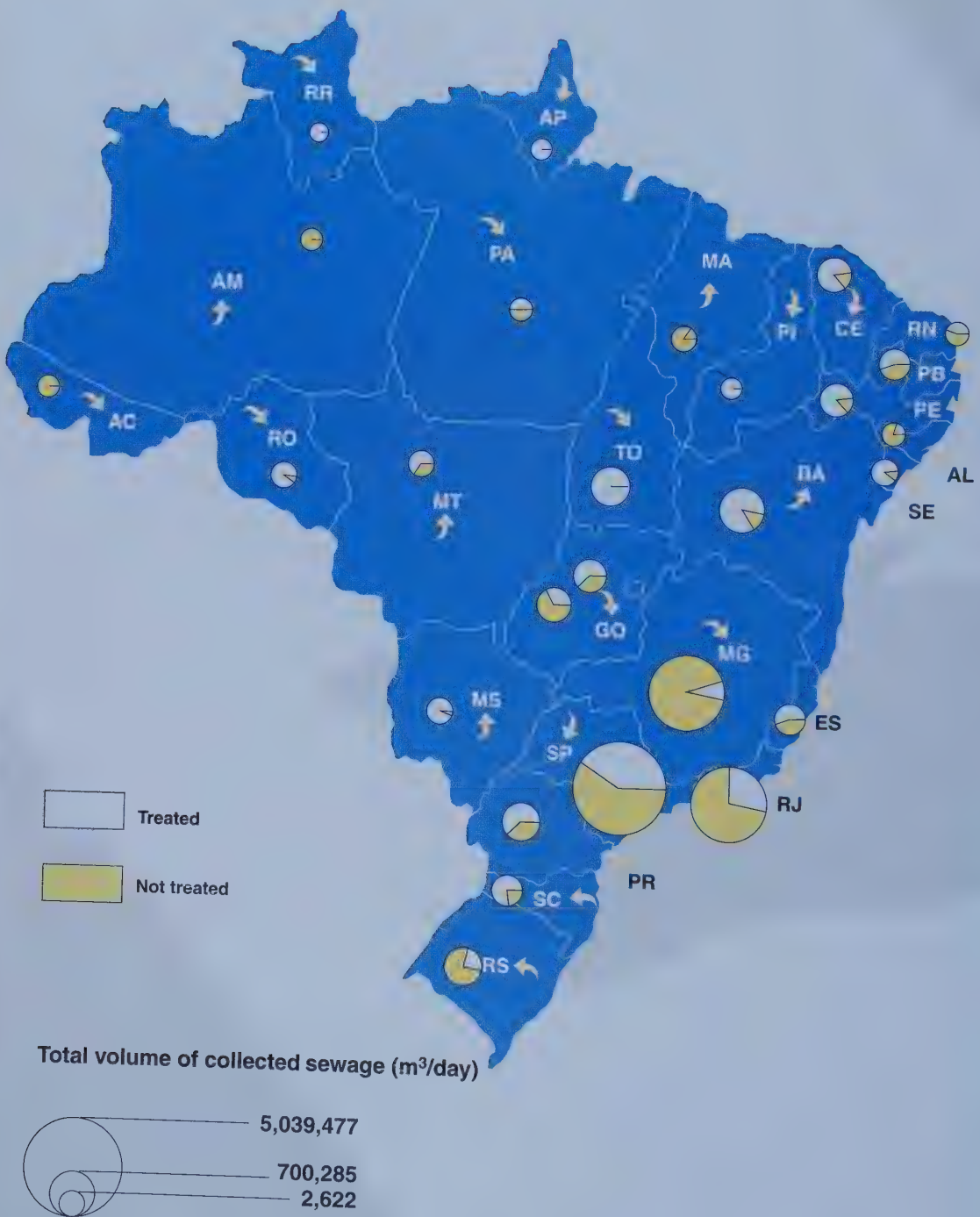
boggling plan of supplying the whole town with water from artesian wells. The allegation was that there was no more surface water available to guarantee the town's needs over the coming years. At the same time he was starting his drilling program he allowed one of the principal sources of the town's surface water, in the neighborhood of Pinheirinho, to be buried by silt washed down by rainwater from earth-leveling work being carried out to build a condominium complex.

Inertia is also a fundamental factor when it comes to managing water. In 1997, Congress approved some comprehensive legislation (law number 9,433 handed down by the Executive Office) that, in theory, would permit the country to move ahead with alacrity in this field. Inspired by the model for managing water adopted in France, (in fact a model that is recognized as being the most efficient in the world due, principally, to the way in which the communities and consumers participate in the programs, and also because of the political and managerial autonomy bestowed on the frameworks), the legislation allowed the States to set up their own management frameworks, (river basin committees), that would start to charge for the use of the water. A fundamental factor of this legislation is that, in Brazil, water is considered to be a finite product, and the committees would have the right to charge an extra tariff for its use apart from the tariff currently in force that is based on charging for capture, treatment and distribution.

Some States, for example, São Paulo, Ceará, and Santa Catarina moved quickly to put the frameworks in place, (just in São Paulo there are 22 basin committees), but as they are all waiting for legislative approval from the respective municipal authorities to start charging for the water, so far, nothing has got off the ground. For example the project that provides for a charge on water in São Paulo has been stagnating in the House of Representatives for the last two years and all the efforts by the State government to get the bill passed have proved in vain. Two sensitive points are causing this delay: the first is the question of the representation of the community that uses the basin. Federal law stipulates that the users should make up 50% of the committees, whilst the original project provided for a participation of 33%. This aspect could be a

TREATMENT OF COLLECTED SEWAGE

2000



Source: National Report on Basic Sanitation 2000, Rio de Janeiro: IBGE, 2002

deciding factor for the success of the programs in each basin. Economist Regina Cavini, currently in the Ministry of the Environment, carried out a study in 1999 on the development of management of water around the world, and came to the conclusion that, in cases where the local consumers effectively participate in the project the programs meet with success. And in the cases where government interferes and tries to influence the process the programs meet with failure. She has no doubts that the degree of autonomy of the committees, together with the engagement of the consumers is fundamental for resolving the problems of fresh water supply. She says: "the basin committees are the strongest and most autonomous institutes in France and the communities have a traditional and clear participation in the whole process. The value of the tariffs, for example, is established for a period of five years. If the committee finds that the levels of pollution in the basin have worsened then the tariff increases because more resources will be needed to resolve the problem; on the contrary, once the problem is dealt with the tariff is reduced. There is no doubt that France stands out as an example for the rest of the world".

The other factor for postponing the vote in São Paulo's House of Representatives was the warning expounded by businessmen that the charge for the use of water could be used as a weapon in the fiscal war being waged between different States in their attempts to attract new investments. The way these businessmen see things is that a state that imposes charges could suffer reprisals with the transfer of investments in industry to another State prepared to treat the subject as another fiscal benefit to attract investors. So it is now up to the National Agency for Water Resources (ANA) to break the deadlock by showing its determination to initiate charges for water in the basins belonging to the Union, in other words, those where rivers flow through more than one State. The preparations for the introduction of the charges before the end of the year are moving ahead, for example, in the Paraíba basin that originates in Minas Gerais, passes through the eastern side of the State of São Paulo and then flows into the State of Rio de Janeiro. ANA also intends to introduce charges in the Piracicaba basin where the headwaters are located in Minas Gerais before

they pass through the Campinas region, one of the most industry-intensive regions in the country.

Throughout the Paraíba basin, companies will pay R\$0.008 per cubic meter for supply and another R\$0.02 for each cubic meter of untreated water returned to the basin. The amounts that will be charged in the Piracicaba basin have still not been announced but they should be similar to those of Paraíba.

As soon as the news about the start-up of charges became public companies all over the two basins began programs to optimize the use of water. This will have a strong influence on the upkeep of the sources of water in a matter of months. Companies such as Ford, General Motors, Klabin, Cibrapel, Bayer, Petroflex, Rhodia, Fiat, amongst hundreds of others, have embarked on intensive programs for recycling water and are discovering that this is not only good for the environment but even better for the pocket-book. A good example is the case of Companhia Siderurgica Nacional (CSN) that invested R\$27 million in the construction of a unit that will treat 90 thousand liters of water per hour. The company is currently recirculating 34 thousand liters per second. If the company had to pay for the use of this water it would be paying R\$11 thousand per month. General Motors do Brasil launched a campaign this year to save water in all of its six plants in Brazil. The company is investing around \$700 thousand in these programs and the aim is to reduce consumption by at least 5%.

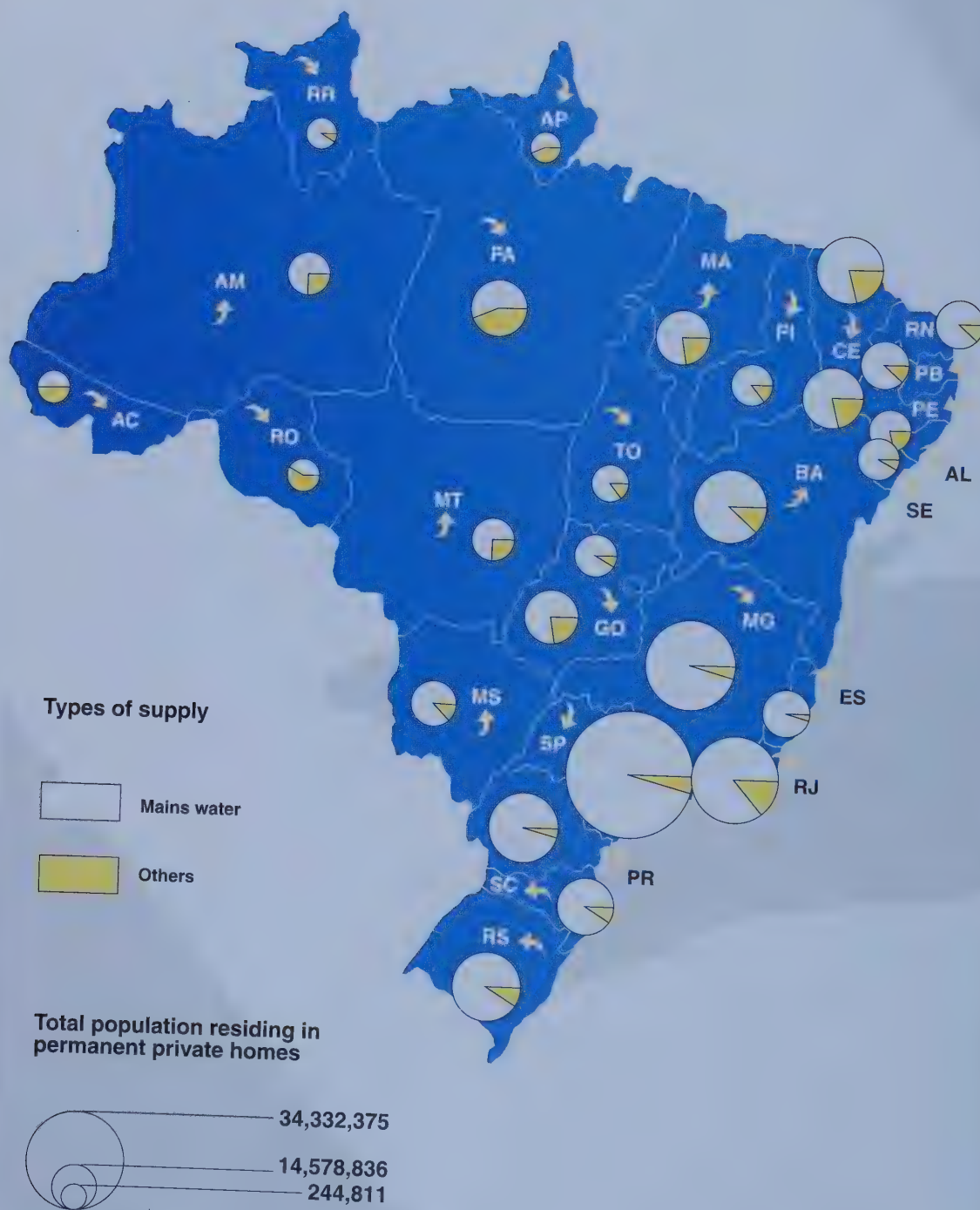
Even though it is located far from federal basins, the Fiat Automobile Company has managed to save R\$30 million on its water bill just in the first half of this year. Ceueti Nakano, the manager in charge of energy and ecology for the car assembly plant, describes the company's rationalization plan with numbers. "If we didn't recycle water we would be buying 1.5 billion liters of water every month. Today we are only buying 120 thousand cubic meters monthly, an amount that we are restoring to the environment in perfect conditions for reintegration. The equipment of the treatment plants has already been amortized so we are now entering the savings in our profit column".

The environment gains in double from the recycling of water by industry. Firstly, with the

WATER SUPPLY



IN URBAN AREAS - 2000



Source: 2000 demographic census. Characteristics of the population and dwellings: overall results. Rio de Janeiro: IBGE, 2001

reduction in captation, because the source is able to retain a larger volume of water for diluting polluting agents. It also gains by a reduction in pollutants because the reutilization invariably involves treatment inside the industrial plants and smaller volumes of disposal with the consequent reduction in pollutants. Although these first initiatives on the part of industries towards a more rational use of water are praiseworthy it is clear that companies still have a long way to go. Not long ago Rubens Becker, the president of Cognis, a medium sized chemical plant, located in Jacarei in the Paraíba valley, launched a challenge to Brazilian industries: that of working with a closed circuit of water or, in other words, eliminating captation and disposals. Does this sound absurd?

A few Brazilian companies are prepared to say no. Cuno Latina, a company specialized in filtering, separation and purification systems implanted the kind of improvements that are its core business in its factory in Mairinque, São Paulo: the cleansing and recycling of the water. With a new system, and according to Carla Eboli a reporter for *Gazeta Mercantil* specialized in environmental matters, Cuno started to filter all of the water used in the production chain and made its reutilization limitless. The company eliminated the disposal of 3,700 cubic meters of water per month, (an amount that could fill 15 thousand domestic water tanks). The concern with a more rational use of water on the part of industry, apart from the pragmatic effect of saving money, also demonstrates the advances made by large companies in relation to the environment. Never before have so many environment-related events been held at FIESP, (the Federation of São Paulo Industries), as in recent months. This last September, the Business Council for Sustainable Development (CEBS) held their monthly meeting there and the speech by the president, Felix Bulhoes, was a sort of synthesis of the concerns that are sweeping through the Brazilian business sector: "In 50 years we are going to have serious problems with the quality of the air and we will witness the dissemination of illnesses and acid rain. Soon afterwards, the climate will be out of control with an increase in sea levels and the submerging of large expanses of the coastline".

It is not strange therefore that large Brazilian

companies have started supporting what can be considered as a new environmental movement that coincides with current scientific discoveries proving that pollution and the desecration of natural resources are putting human survival on this planet at risk. Gathered under umbrellas such as CEBDS, the ETHOS Institute, and the São Paulo Panel for Cleaner Production, companies are investing more and more in environmental management and are completely rethinking their old concepts.

Time has still not been able to repair the damage caused in no less than 255 areas contaminated by different types of toxic waste, just in the State of São Paulo. It's true that 100 of them result from small companies such as gas stations that were never concerned with corrosion in their underground fuel tanks. But on the other hand the mere existence of these trouble spots shows that even large multinationals with a few notable exceptions have been totally unconcerned with the disposal of their waste and have ignored their high degree of toxicity. Could this attitude now be a part of the past?

Some data would suggest so. For example: no less than 610 Brazilian companies have obtained the environmental certification ISO 14.001. The number is impressive not just for the amount but also for the speed with which it has grown in the last few years: in 1999, the number of certificated companies was only 90. Specialists have no doubts about the authenticity of this certification: "it is a fact that every company that obtained its ISO 14.001 certificate was obliged to enter a spiral of continuous environmental management and that they are starting to show genuine concern about prevention in terms of achieving cleaner production", comments Elie Politie, ex-coordinator of the environment for the National Service for Industry (Senai), and presently a member of the São Paulo Panel for Cleaner Production.

All of the advances made by large companies with certification are still far from enough if we consider the reality that is insistently denounced by the Brazilian Association of Companies for the Treatment of Residues (Abetre). Recently, (September/02), the entity published a survey with some frightening details about the destiny of residuals in Brazil: of the 2.9 million tons of industrial waste produced in the country per year, only 28% (around 812 thousand tons) have a

known destination or, in other words, are treated and correctly disposed of without causing any damage to the environment. The destination of the rest, (more than two million tons), is either unknown or inadequate, meaning they are dumped in the open provoking contamination of the soil and the water tables.

The president of Abetre, Carlos Fernandes, thinks that Brazilian industry has to become more aware of the needs for rigorously controlling the flow of residuals in order to avoid becoming the victim of its own environmental wrongdoing: "We should not forget that Brazilian legislation considers the generator co-responsible as per the National Policy for Solid Residuals that is presently under review by Congress. To exonerate the generator of the residual from responsibility, even after the material has been disposed of, signifies opening a door for punishing the indiscriminate creation of environmental damage. In all of the industrial nations in the First World the generator continues to be responsible for the residuals".

Although they are still waiting for regulatory sanctioning more than 40 projects forwarded to Congress by Deputy Emerson Kapaz on the

subject of waste and residuals are actually making progress. A good number of companies are attacking the problem in a way that is described by Rubens Becker at Cognis in his phrase: "The truth of the matter is that residuals don't exist. What exists is raw material that has not yet been turned into a product" Companies are putting a lot of effort into taking advantage of something that traditionally was disposed of.

The implantation of urban sanitation dumps, both for toxic residuals and also for organic waste, starts to be seen as a good investment. Right now, in Florianopolis, in the State of Santa Catarina, Proactiva, a company formed by an association between the French company Vivendi and the Spanish company Fomento Construcciones Y Contratas S. A., took over the job of giving a correct destination to the waste of towns in the region, something previously carried out by the City Hall. The companies' project is both promising and bold: it intends to transform the Biguacu, (a neighborhood in Metropolitan Florianopolis), waste dump into a showroom for their operations in Brazil. And in an explicit demonstration of its objectives it has started to attack the problem of



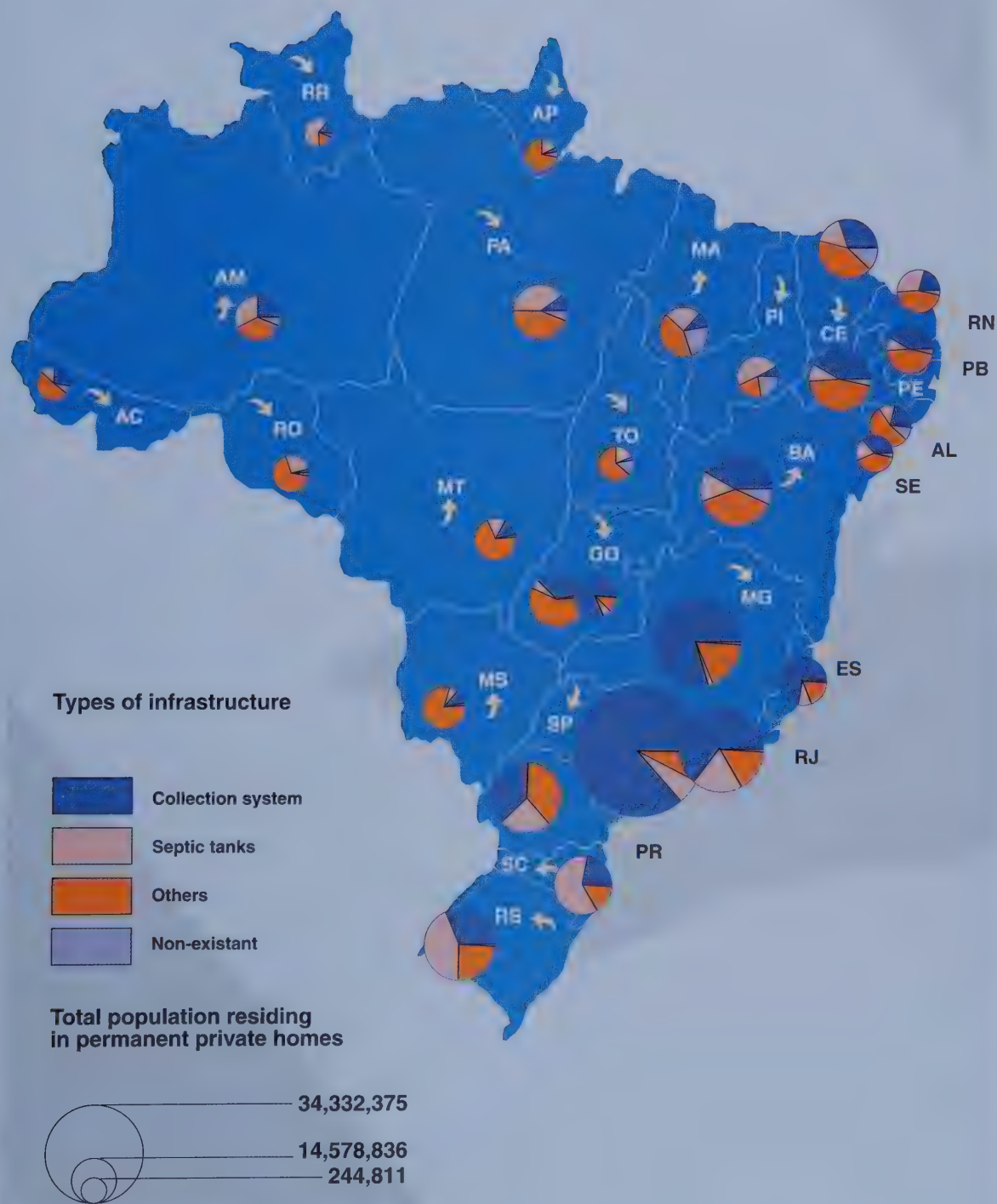
Open air waste deposit in the open air in Carapicuíba, in Greater São Paulo. The horse enjoys itself while the woman searches for leftovers.

SEWAGE DISPOSAL

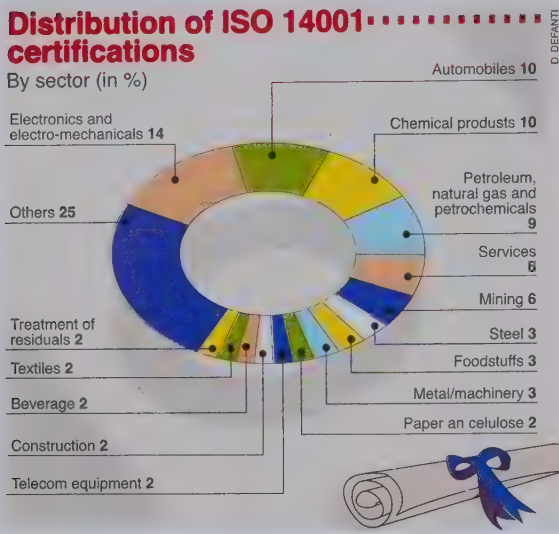
D. DEFANTI



IN URBAN AREAS - 2000



Source: 2000 demographic census. Characteristics of the population and dwellings; overall results, Rio de Janeiro: IBGE, 2001



Source: IBS

the leakage that causes a very unpleasant odor.

If, in a few months time it can announce that it has resolved the odor problem at a large urban waste dump the company will be the talk of the town and applauded by specialists. Resulting from the decomposition of organic material the bad smell comes from a highly acid, corrosive and contaminating liquid. A medium sized dump generates large amounts of this foul smelling liquid that looks like a muddy stream. In a region like Florianopolis, where the soil cover is fragile and sandy, this leakage represents a source of permanent environmental hazard. The way that Proactiva has been dealing with the problem is very encouraging; according to Juliana Wilke, a reporter for Gazeta Mercantil in Santa Catarina: Starting at the collection area the liquid passes through a reactor that initiates the physical/chemical treatment. Then it goes to a dosage tank containing the appropriate chemicals for treatment. There, the solid particles are compacted into larger and heavier flakes. Then all the material passes through a decantation process where the solids descend and turn into slime that is returned to the dump for new treatment and separation of the heavier metals. The liquid left over is quite clear and is deposited in a lake where it receives yet another biological treatment. The water from the leakage is only returned to the environment after its ph factor has been adjusted. According to the technicians at Proactiva it comes out purer than the water in the river where it will be dispersed.

The truth is that there is much still to be done

in the sanitation sector but the country has legislation that has either been passed, or awaiting approval, that is capable of creating an investment-friendly environment. Opening the sector to private capital, be it local or international, allows us to imagine huge opportunities for business and for businessmen who believe in the future. Water and dedicated people are not lacking, nor is support from a community that is thirsty for solutions and to know more about the subject.

On the outskirts of the large Brazilian cities, the springs are also threatened by so-called "diffuse pollution", which means everything that falls into the streams, rivers and dams not contained in the sewage system - from sediments to match sticks or cigarette tips. It is estimated that in the Greater Sao Paulo area, the country's most populous urban conglomeration with 17.5 million inhabitants, the volume of diffuse pollutants is currently twice as

Prospect for generation from industrial waste according to Abetre - 2001

States	Quantity
Parana (tons/year)	
Metropolitan Region Curitiba and Londrina	
Class I	17,520
Class II	125,268
Total	142,788
Rio de Janeiro (tons/month)	
Baía de Guanabara	43,331.97
Paraíba do Sul	259,491.13
Baía de Sepetiba	35,148.25
Lagoa de Jacarepaguá	12,602.55
Oceânicas	172,335.44
Total	522,909.34
Rio Grande do Sul (tons/year)	
Dangerous	9,925
Non-inert	813,593
Inert	24,842
	848,360
Santa Catarina	
Joinville (tons/year)	
Class I	37,680
Class II	213,600
Total	251,280
Sao Paulo (tons/year)	
Class I	535,615
Class II	25,038,168
Total	25,573,783

Source: Brazilian Association of Companies for the Treatment Recuperation and Disposal of Special Waste (Abetre) and the Sector Panorama
* Official details from Cetesb 1992, updated in 1997



This scene is still common in the outskirts of the large Brazilian cities. Waste collectors search for leftovers that can be sold.

much as that carried by the sewage drains. The good news for the region is the dynamism of the São Paulo Municipal Secretariat for the Environment that has already managed to implement an environmental policy in the city's directive plan. In partnership with the Secretariat for Construction Works, Stela Goldstein, the Secretary for the Environment has defined a specific policy for the control of solid residues that will later be expanded to control diffuse pollution, a target that will only be achieved through environmental education and efficient inspection.

Sao Paulo also synthesizes another problem that is intensifying and worsening in Brazilian cities although the country already possesses tools capable of fighting it; this is vehicle pollution. According to Companhia de Tecnologia de Saneamento Ambiental (Environmental Sanitation Technology Company) - Cetesb - the huge fleet of vehicles of Greater Sao Paulo releases around 1.66 million tons of carbon-monoxide (CO) per year.

The means for solving this problem have not even been fine-tuned yet. For the past 15 years the public entities that were created to solve this problem have concentrated on one sole aspect; that

of reducing the number of vehicles in circulation by adopting permanent rotations of tag numbers or building new roads for the fleet of vehicles in an attempt to fight the monstrous traffic jams. They convey the idea that the chaotic traffic in the metropolitan area is to be blamed on the excessive number of vehicles. The most attentive users know that what is lacking is strong management for regional traffic. This represents compliance with the continuity theory.

In the seventies, the city of Curitiba, the capital of Parana, seen as a world example of urban planning, started to work on the idea that there is no need for more room to make the traffic flow. What it needs is to be flowing. The city started to reduce the number of traffic lights, synchronize those that could not be removed, eliminate cross-roads in the most critical areas, and monitor the flow of vehicles through an electronic system. The city's fleet grew as much as, or more than, that of São Paulo, however Curitiba has always had traffic that flows.

In Sao Paulo, for example, long stretches of the avenues that surround a good part of the urban grid (the so-called Marginals) still do not have hard shoulders. That, added to the accentuated old age

of part of the fleet translates into chaos; it can take hours to remove a broken down vehicle. There are no plans to quickly replace the older vehicles or to raise the bridges that are not high enough for the transport of freight. Not long ago, a truck carrying a tractor collided with the Eusebio Mattoso bridge on the road that borders the river Pinheiros destroying several of its support beams. This section of the bridge is now being repaired to the same height as before. The complications that the accident brought to the flux of the traffic in São Paulo were enormous.

The city has still not realized that road traffic must be managed by zones of influence. In other words, ensuring the traffic flow of a certain road is not enough; they have to be managed concomitantly with all the adjoining ones. It is impossible not to notice, for example, that a traffic jam on the Faria Lima Avenue, in Sao Paulo, is reflected on the Marginal de Pinheiros. It seems that the public entities do not take into account the losses that chaotic traffic cause to the economy of the city. A much larger quantity of fuel is burned, thousands of people waste several hours of work stuck in traffic jams without mentioning the effects on their health because congested traffic increases the levels of pollution leading to an increase in respiratory problems and heart disease. Although the country already has the technology and fuel (alcohol) to produce a "clean car", that can already be seen on the roads of many North-American and European cities, there are no environmental or urban policies to encourage its production on a large scale, this according to the

Associação Nacional dos Fabricantes de Veículos Automotores (Brazilian Association of the Automotive Vehicle Manufacturers) - Anfavea -. According to the president of the Infrastructure, Energy and Environment Commission of Anfavea, Henry Joseph Jr., inspection programs have not been efficiently implemented in Brazil since 1993.

Outside the large cities the greatest environmental problem is that of deforestation which, in its turn, is reflected on the protection of the fauna. Brazil still has more than 5 million square kilometers of vegetation cover. It is the second country in terms of forest cover in the world after Russia. However it loses some 20 thousand square kilometers of vegetation a year due to lumber production and fires that are sometimes criminally set. There is good news and bad news stemming from the country's efforts to preserve its plants and forests. Some of the bad news comes from the National Forestry Program (PNF) of the Ministry for the Environment and shows that Brazil is approaching a "forest blackout", meaning it is on the verge of facing a serious crisis in regards to the availability of lumber for industrial and energy use. The director of PNF, Raimundo Deusdara Filho, affirms that the reconstitution of areas planted with trees such as pine and eucalyptus has been below the required limits for more than a decade, or, when the fiscal incentives for replanting were abandoned. He even affirms that there is the risk of a "blackout" in the supply of lumber starting in 2004.

Still according to the PNF, the situation in the south of Brazil already points towards deficits in supply. Furniture industries in Santa Catarina run the risk of losing competitiveness as they see themselves forced to buy lumber out of the state. The most worrying problem is that every time there is a lack of lumber in the so-called commercial forests the pressure on the native wood increases.

Environmental groups do not always recognize the contribution that commercial forests make towards the preservation of native forests. At this very moment, in Espírito Santo, and in partnership with state representatives, environmentalists are trying to stop the expansion of the eucalyptus forests owned by Aracruz Celulose (one of the largest Brazilian paper and pulp producers). What is seen as an ecological crime in Espirito Santo is seen in

**Residuals that have been treated
and forwarded to dumps by
associates of Abetre**

Final destination	Volume (tons/year)
Landfills	423.7
Incinerators	24.0
Treatment	1.5
Co-processing	145.0
Total	594.2

Source: Brazilian Association of Companies for the treatment, recuperation and disposal of Special Residuals (Abetre) and Sectorial Panorama

the interior of Sao Paulo as a realistic alternative for the adoption of good environmental policies: "Currently commercial forests should be seen as an ally of conservation programs as they help take the pressure off native forests and contribute to the protection of the soil" affirms Ademar Romeiro, chief executive at the Satellite Monitoring Center (NMA) of Empresa Brasileira de Pesquisa Agropecuária (Embrapa), in Campinas (SP). Ademar gives a number of examples in the state of Sao Paulo, especially in the region of the Mantiqueira mountain range, where pine and eucalyptus forests have been used successfully to hold back erosion and have offered an economical alternative for small farmers in harmony with their native forests. According to Ademar, it is entirely possible to combine commercial forests with ecological interests - such as clumps and alleys of native vegetation - in a way that will preserve the fauna.

The best news for the preservation of forests comes from the carbon credit market. It is common knowledge that trees highjack significant volumes of the carbon effluents that are causing the greenhouse effect (this is increasing the surface temperature of the Earth and could start producing tragic results within fifty years). Thus, all projects that include reforestation in developing countries will generate a carbon credit that can be sold to developed countries that will soon be forced to reduce their emissions of gases that generate the greenhouse effect. This complies with the Kyoto Protocol.

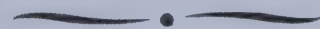
Inspired by this policy several projects for the reinstatement of native forests have started to emerge in Brazil, especially along the Atlantic Forest coastline. This was the most devastated forest in the whole country. The start-up of the carbon market in Brazil arises as a sort of counterbalance to the delays, caused by Congress, in approving comprehensive legislation that has the re-forestation and conservation of the Atlantic Forest as one of its main objectives and includes the adoption of fiscal incentives.

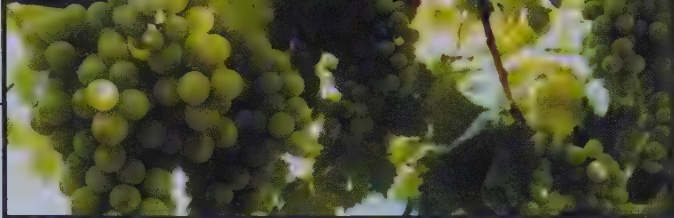
Even more encouraging in this field is the level of awareness of the population in regards to major environmental issues. Recent surveys in the state of Sao Paulo for example (the largest lumber consumer in the country) identify that the lumber trade and processing industry in the Amazon is starting to pay

attention to the origin of the product and there are already several businesses working exclusively with certified lumber; in other words lumber that offers certification that it was extracted from areas of sustainable growth. Maybe this heightened awareness on the part of the public regarding environmental issues was responsible for persuading Natura, a large cosmetics company, to publicly recognize that it had used non-certified lumber for the production of the packaging for one of its products and to donate the full profit earned from the sale of that product to a conservation entity.

The state governments also decided to increase their efforts for conservation. In the past decade some of them created the so-called Ecological Value-Added Tax. The former tax on the circulation of goods and services took on an environmental facet. As the state governments are responsible for dividing the tax money amongst the municipalities they decided to allocate these funds to environmental-friendly projects. Parana, the first state to adopt the Ecological Value-Added Tax, already records an increase of 158% in areas under permanent protection. At the moment seven other states have adhered to this mechanism and three others plan to adopt it in 2003.

It is obvious that greater forest protection helps contribute to the reappearance of species of fauna that were endangered not long ago. The Brazilian Institute for the Environment and Renewable Resources (IBAMA) has catalogued 219 endangered species of Brazilian fauna. It is still early to say whether the increase in conservation awareness will manage to stave off the process of eradication. So far, the environmental groups have only managed to complain about a lack of monitoring to enforce the environmental protection laws. These laws are rigorous and have been implemented in Brazil over the past few years (the killing of any species of wild fauna in Brazil is a crime without the right to bail). Anyway, it is rewarding to witness the return of birds such as song thrushes and other species to the cities, as well as the exuberant proliferation of canaries in the fields of Santa Catarina.





Sunshine and Vineyards

Now and again in the 1950's, in the city of Petrolina on the borders of the São Francisco River tusked away in the hinterlands of Pernambuco, the "manna of the gods" would appear. This was the expression the people used to refer to cans of dried milk sent by an American assistance program. The milk came in lumps like pieces of white chocolate that appeased the hunger of the children who would often wrestle each other to get at a chunk of it. These starving kids were from groups of "retirantes", as families from the distant places in the arid regions of northeastern Brazil were called, and who, for centuries, had abandoned their homes, their land, and sought to escape from the drought in something like a Diaspora in search of water. The São Francisco River was there to appease thirst but it did not provide a solution for hunger.

In 1960, the Northeast woke up to a reality: no civilization had ever managed to emancipate itself without finding a way of collecting, accumulating, distributing and preserving hydric resources. This was when the first irrigation project was implemented in the region - the Drinking Fountain - 45 kilometers from Petrolina. The experiment was extended throughout all the fertile areas and the Northeast started on a road that would invert the paths of Brazilian

economical development for the first time since the country's discovery. previously the coastal areas and their cities were responsible for introducing progress to the interior. Recently, there has been a reversal of this tendency with the appearance of large clusters of irrigated agriculture in all the northeastern states that are attracting large local and foreign investments and generating jobs and income.

It is the new Northeast that springs from the heartland of its interior. There is an effervescence that marks a moment of change, leaving behind the times when the region was chastised by the dire aspects of drought. Rains are still a scarce commodity however the São Francisco Valley, between Petrolina (PE) and Juazeiro (BA), is now the largest nucleus of irrigated fruit farms in Brazil, and is responsible for 95% of the exports of table grapes and for 86% of the international sales of mango. In 2001, these two activities added \$64 million to the Brazilian commercial balance of fresh fruit, a number that came to \$101.649 million. This can be interpreted as a fluvial revolution: the São Francisco river that used to appease the thirst of the afflicted turned a part of the Northeast into an area that produces both food and wine.

Many steps were also taken in other regions. The southern region of the State of Maranhão is another example of a new agricultural frontier. The exuberant soybean and cotton fields found in Balsas, Riachão, Nova Colinas, São Raimundo dos Mangabeiras, Fortaleza dos Nogueira, Sambaíba, Tasso Fragoso and Alto Parnaíba became visiting cards for the region's agricultural capacity. In the south of the State of Maranhão one can also see the gold and yellow color of wide expanses of land planted with rice crops. The Gurgueia Valley, in the state of Piauí, is another area with enormous potential for irrigated agriculture. Bahia, that also stands out due to its irrigated cotton, soybean and coffee crops, has been recording extraordinary advances in the agricultural production of its fields and together with its adjoining state of Rio Grande do Norte, that also produces cotton, is seriously competing with traditional cotton areas such as the Midwest region.

These advances became a reality because they took advantage of a number of factors that favor the Northeast - good soil, water and lots of sun. And, for the same reasons that investors and entrepreneurs were attracted by the potential of the northeastern farming sector, the sun - Lord of the Northeast - is attracting the tourism industry to the Region. Following a coastline blessed with one thousand kilometers of beaches with calm and warm waters that change from green to blue, local and international investors - Portuguese, Italians, Spanish, Swiss, Germans, French and Americans have gradually made inroads in the Northeast. The Brazilian Association for the Hotel Industry - Abih, forecasts that, by 2004, private investments in the hotel industry of the Region will reach \$1.5 billion. It is expected that thirty thousand new apartments will be added to the current hotel network - a 33% increase in the region. Banco do Nordeste estimates, for the same period, investments of \$6.6 billion in the region's tourism and leisure industry, an amount that includes values already budgeted for new ventures.

Obviously the climate favors this inflow of investments but irrigated fruit farming is one of the great achievements of the Northeast. Throughout the region, there are 5,000,000 hectares of potentially irrigable areas. These areas have, at least, one comparative advantage - sunshine - in relation to the other irrigated areas with a semi-arid climate in other places in the world, such as California, in the United States. There are approximately 3,000 hours of sunshine per year, compared to 2,200 hours/year in California. Differently from those regions, the Northeast of Brazil has a constant heat factor, high luminosity and relatively low humidity, which, when associated to the availability of soil and water for irrigation, provide for efficient farming with high rates of productivity that allow for reducing production costs together with a low incidence of blights and diseases. Furthermore, this region counts with a structured network of urban centers and cities that are well managed, have good infrastructures for offering goods and services and, in some cases, sophisticated industrial clusters.

The irrigated fruit-farming cluster in the Sao Francisco Valley, which includes provinces that border the Sao Francisco river in the states of Pernambuco and Bahia has already consolidated its position in Brazilian and foreign markets. Favorable winds blow in all directions with exports to the United States, Europe and Argentina. The main fruit crops are grape, mango, banana, green coconut, guava, Barbados cherry, lime, passion fruit, papaya and sweetsop, amongst other less significant ones, amounting to an approximate production of 800 thousand tons/year. This is an expressive number considering that, in 1990, production was approximately 190 thousand tons/year.

Grape and mango are the products that have the greatest influence on the export mix of the Valley. Out of the 20,660 tons of grapes exported from Brazil to foreign markets, 19,627 tons were produced in the Valley. As to mango sales the Sao Francisco Valley exported 81,155 tons of a total of 94,291 tons sold by the country, or about 86%. Brazil received \$50.814

million with the export of these products and the participation of the Valley was 80%, or \$43.443 million. There are, altogether, 170 companies doing business in different regions of Pernambuco such as Petrolina, Lagoa Grande and Santa Maria da Boa Vista and in Juazeiro in the State of Bahia, where we also find exports of melon, guava, watermelon and fresh. Among the export companies of the Valley, Agropecuária Vale das Uvas that belongs to the Carrefour Group, stands out by directly selling grapes in Europe through its international network of grocery stores. Also located in the Valley is the Frutivale S/A Company, an association between a businessman from Pernambuco, Eduardo Maciel, the Silvio Santos group, and other traditional companies such as Agropecuária Santa Tereza S/A, Fazenda Pérsico S/A and Frutivale e Vinicola de Vale do Sao Francisco - the Milano farm, one of the pioneers in the Region.

Irrigated agriculture is also found in the Jaguaribe Valley, in the state of Ceara, and the valleys of Apodi/Mossoro and Piranhas/Açu, in Rio Grande do Norte. The State of Ceara counts with some 170 thousand hectares that have the potential for developing irrigated crop projects, 62 thousand of which are already irrigated in the six integrated agriculture clusters that include 62 provinces. In Ibiapaba, 300 kilometers from Fortaleza, the potential for irrigation encompasses 10 thousand hectares and amongst the main products are flowers and vegetables. In the Lower Jaguaribe, 200 kilometers from Fortaleza, we can find banana, melon, mango, grapes and pineapple crops. In the metropolitan cluster, which involves 15 municipalities, including Fortaleza, coconut features as the main product with an annual production of 142,272 million units that supply local and foreign markets. Also other crops such as sapodilla and cherimoya are starting to be encouraged. The Cariri cluster produces mango, banana, guava and grape in addition to flowers and tropical plants. In the Mid-South region banana is the most common fruit - (8 thousand tons/year), but other crops such as guava, sweetsop, papaya, Pacovan banana,



The mango produced in the São Francisco Valley is of excellent quality and is exported to Europe and the United States.

passion fruit and cherimoya are also found. Finally, the Lower Acaraú region focuses on the production of pineapple, lime, coconut, banana and papaya.

In Rio Grande do Norte, where there are already 11 thousand hectares of irrigated land, there still is a potential of 1.2 million hectares for irrigation, representing 23% of the total area of that State. The water supply for this area would basically be provided by the basins of the Apodi-Mossoró and Piranhas-Açu, which already supply almost all the existing irrigation projects. The main irrigated area of Rio Grande do Norte is that of Mossoró-Açu, the largest export-oriented fruit producing cluster of the State, and where sales reach some \$20 million. Melon is the main product in the fruit production of Rio Grande



The harvest of melon in Rio Grande do Norte, a state that produces an annual average of 55 thousand tons.

do Norte, averaging 55 thousand tons/year in exports although bananas are starting to show excellent results for growers.

In Bahia, two large cooperatives have already made the first steps towards consolidating the marketing of their mangos in the United States and Europe. These are: Cooperativa dos Produtores de Manga e Derivados do Estado da Bahia - Comamba, with headquarters in Juazeiro, and Cooperativa dos Fruticultores do Oeste da Bahia - Cofrutoeste, with its head office in Barreiras. The latter has enhanced its post-harvest operations by the implementation of a modern packing facility with an initial capacity for processing 5 thousand tons of mangos per year.

Comamba is made up of 280 small and medium producers and its goal is to process 12 thousand tons of mangos per year, an amount equivalent to 60% of its 280 associates' total production. Cofrutoeste's aim is to fulfill market requirements, principally those of the foreign market, by adopting state-of-the-art technology to guarantee the outflow of production and higher returns to the producer. Simultaneously, this entity has been introducing the small producers (more than 95% of those participating in the cooperative) to foreign markets.

The sector has also been investing large sums in the implementation of modern production techniques as well as the improvement of the species and development of new varieties. In Petrolina specialists from the agricultural and cattle raising Research Center of the Semi-arid Tropics belonging to Empresa Brasileira de Pesquisa Agropecuária - Embrapa (Brazilian Company for Agriculture and Cattle Breeding Research) are developing a Brazilian version of seedless watermelons. The mangosteen, which was given the Portuguese name of mangostao, is another novelty in the northeastern hinterlands and is the most exotic fruit produced in Bahia. Other innovative experiments are atemoias - a cross between sweetsop and cherimoya, found in South American countries such as Colombia and Venezuela - pomegranates of the variety Wonderful, originally from California, and dates.

Apart from the Sao Francisco Valley, citric fruit plantations are also found in the states of Sergipe and Bahia. With orange plantations that stretch from the northern coastline of Bahia to the South of Sergipe these two states are disputing a place as the second largest producer of this fruit after Sao Paulo. The citric region of Sergipe closed the year 2001 with the smallest crop in the past ten years - 500 thousand tons. The average production of this state is around 750.000 tons, and in 1998 it reached 1 million tons. In Sergipe approximately 25 thousand producers, spread over 14 provinces, are dedicated to orange crops. In recent years, the worst problem has been Pierce's disease, as Citrus Variegated Chlorosis (CVC) is known. To fight this blight producers are building open

greenhouses in their orchards. Currently, 60% of the orange crop in Sergipe is destined to the concentrated juice industries of the state and the remaining 40% is sold to the markets of Alagoas, Pernambuco, Paraíba, Piauí, Rio Grande do Norte, Espírito Santo and Minas Gerais. In the first quarter of this year, non-fermented frozen orange juice represented 77.85% of the exports from Sergipe, totaling \$4.6 million, while orange oil and essence represented 6.57%, amounting to \$386.7 thousand.

One of the juice manufacturers in Sergipe, Marata Sucos, has crushing capacity for 47

thousand tons of oranges per month. This industry has returned to its policy of marketing its concentrated juice in the European market, especially in Spain, Germany and England where it sells 95% of its production. To overcome the period between harvests Marata is carrying out research to start growing other fruits such as pineapple and passion fruit. Another company - Duas Rodas Industrial - is setting up operations in Sergipe. A manufacturer of raw material for the foodstuffs industry, Duas Rodas is located in the province of Estância, 70 kilometers from Aracaju. With R\$15 million of

Growth in fruit cultivation in the Northeast

Year	Prod. of Mango (1 000 units)	Part. in national production (%)	Evolution compared to 1990 (%)
1990	834.966	53,61	0,00
1991	842.164	53,59	0,86
1992	848.722	53,87	1,65
1993	755.609	46,93	-9,50
1994	893.390	51,69	7,00
1995	973.719	53,39	16,62
1996	808.755	47,70	-3,14
1997	952.210	46,83	14,04
1998	957.724	51,10	14,70
1999	1.032.735	56,56	23,69
2000	1.294.325	60,11	55,02

Year	Prod. of Grape (1 000 units)	Part. in national production (%)	Evolution compared to 1990 (%)
1990	29.670	3,69	-96,45
1991	38.192	5,89	28,72
1992	65.304	8,16	120,10
1993	82.064	10,42	176,59
1994	87.847	10,88	196,08
1995	118.321	14,14	298,79
1996	115.972	16,93	290,87
1997	92.674	10,40	212,35
1998	122.396	15,81	312,52
1999	134.502	14,44	353,33
2000	156.732	15,30	428,25

Year	Prod. of Limes (1 000 units)	Part. in national production (%)	Evolution compared to 1990 (%)
1990	315.917	5,07	0,00
1991	330.935	5,31	4,75
1992	355.658	5,02	12,58
1993	641.184	8,88	102,96
1994	358.128	5,10	13,36
1995	366.177	5,64	15,91
1996	342.612	5,11	8,45
1997	366.874	5,05	16,13
1998	436.088	5,89	38,04
1999	464.833	5,90	47,14
2000	506.728	6,14	60,40

Year	Prod. of Passion Fruit (1 000 units)	Part. in national production (%)	Evolution compared to 1990 (%)
1990	1.009.589	38,19	0,00
1991	1.049.608	33,11	3,96
1992	1.009.547	28,96	0,00
1993	1.013.876	33,75	0,42
1994	1.178.912	37,22	16,77
1995	1.354.202	40,04	34,13
1996	1.467.889	42,92	45,39
1997	1.403.099	46,99	38,98
1998	1.106.186	44,36	9,57
1999	1.141.720	42,89	13,09
2000	1.271.406	46,02	25,93

Year	Prod. of Melon (1 000 units)	Part. in national production (%)	Evolution compared to 1990 (%)
1990	50.162	84,50	0,00
1991	70.951	88,50	41,44
1992	82.720	92,04	64,91
1993	106.018	92,98	111,35
1994	99.873	91,98	99,10
1995	151.194	94,93	201,41
1996	141.559	94,70	182,20
1997	138.933	93,77	176,97
1998	168.911	95,00	236,73
1999	164.411	94,56	227,76
2000	163.688	93,69	226,32

Year	Prod. of Coconuts (1 000 units)	Part. in national production (%)	Evolution compared to 1990 (%)
1990	619.698	84,38	0,00
1991	697.867	82,00	12,61
1992	731.756	82,13	18,08
1993	665.313	79,44	7,36
1994	730.541	79,51	17,89
1995	761.080	78,73	22,81
1996	688.112	71,94	11,04
1997	757.934	78,35	22,31
1998	787.611	76,72	27,10
1999	930.726	77,13	50,19
2000	932.960	71,69	50,55

investment, the unit will produce essences, (powder and concentrated liquid that add flavor to foods), a market that represented \$153.2 million in Brazil in 2001. They will also be producing raw material for ice-cream. The goal is to reach revenues of R\$25 million in the third year of activities.

However fruit growing is not the only reason for pride in the Northeast. The wines produced in the northeastern hinterlands, once again in the Sao Francisco Valley, are a very special case study. With a cluster of vineyards spread out among the provinces of Lagoa Grande, Santa Maria da Boa Vista and Petrolina, the state of Pernambuco is one of the country's largest producers of quality wines and has a very ambitious goal: to have a planted area of 1,500 hectares of wine grapes producing some 30 million liters of quality wine by 2005. This amount currently represents the total Brazilian production. Lagoa Grande with its production of 500 hectares of wine grapes is already responsible for one third of the national production which amounts to 10 million liters a year.

The Sao Francisco cluster is the Country's largest exporter of table grapes - 2.5 million cases per year - but wine production has been so successful that many producers of table grapes are replacing their plantations with wine grapes. The planting of table grapes started in 1974, but it was only in 1978 that the plantation of wine grapes started. The vineyards of the Northeast can almost be considered a miracle. And it was a pioneer from Rio Grande do Sul, Jorge Garziera, who discovered the technique for growing the fruit and introduced the planting of wine grapes to the region.

The grandson of Italians Garziera learned everything about the wine business during his boarding-school years at Escola de Viticultura de Bento Gonçalves. He became a teacher and ended up by winning a prize for the first wine he produced together with his boarding school pupils. The prize was participation in periodic specialization courses in Argentina where Garziera became acquainted with irrigation techniques for the production of grapes. In 1975, he was invited by Franco Persico, a Sao Paulo

businessman, to lead a project for the production of table grapes on the Milano farm in the province of Santa Maria da Boa Vista (PE). The difficulties in making the grape seedlings adapt to 40 degrees of heat in the shade were huge. One day, discouraged by so many setbacks, Garziera went to a shed and to appease his anger he kicked some sacks of plaster. Immediately he remembered that, as a child, he had spent months with one of his legs in a plaster cast and that the leg was always cool due to the plaster whilst the rest of his body suffered with the heat. Eureka! He dissolved a little plaster in water until it turned into a paste and covered the grape shoots thus avoiding dehydration. The result was that the rate of survival of the seedlings jumped from 10% to 90%.

Garziera returned to Rio Grande do Sul but in 1978 he was offered a full-time job at the Milano Farm. With financial help from the Pêrsico family he bought a Dodge, attached a trailer to it filled with 32 varieties of wine grapes and started driving north. Four days later he arrived at Santa Maria da Boa Vista. Afraid of losing the seedlings he planted them all at the same time. The results were discouraging as they covered only one hectare and only seven out of the 32 varieties showed potential yield in the Region. However, a whole new phase was about to start. In 1985, the first wine produced in the Sao Francisco Valley came to the market, and today, the Milano farm has 100 hectares of wine grapes and produces around 1 million liters of quality wine per year.

This is a story with a happy ending. At 70 years of age, Garziera lives in the hinterlands of Pernambuco and recalls those early days with enormous satisfaction. Recently the Sao Francisco Valley launched another fine wine in the market with the name of Garziera. The Pernambuco cluster can boast some fine vineyards: Vinicola Sao Francisco which is the pioneer, (Milano farm) has already been producing the Botticelli wines for 18 years. Its goal is to produce 1.2 million liters by the end of this year and it is preparing to launch the Sparkling Asti Botticelli and the Petite Syrah Botticelli Collection; Adega Bianchetti Tedesco,



The production of table grapes and wine grapes is increasing in the areas irrigated by the São Francisco.

which started its activities in 1997 is producing the respected Bianchetti Sauvignon Blanc and Bianchetti Cabernet Sauvignon wines in addition to another two types of table wine. Its production is handcrafted and counts with eight hectares of wine grapes. The company is also investing in the expansion of its facilities; Vinicola Lagoa Grande, which started by producing the Garziera and Carrancas wines of the Sao Francisco, has 50 planted hectares and expects to reach a production of 1 million liters in 2004; Vinicola Santa Maria that produces the wine and the sparkling asti Adega do Vale also renders bottling services for other brand names such as Miolo. It has 200 hectares of planted vineyards and more than 100 hectares are being sown with 26 different varieties of grapes; and Vinicola Miolo, that is implementing its 2.8 thousand-square meter complex projected to produce 2.3 million liters of wine, is also investing in eco-tourism by building a Wine Spa. Another two are in the stage of being tested: Sereníssima, owned by an Italian group, and the French brand Ducos. Companies from Rio Grande do Sul such as Georges Aubert and Casa Valdugo are also planning to set up business in the region, as well as the Portuguese company Caves Don Teodosio.

The special characteristics of the Sao Francisco Valley are attracting a great number of industries to the region. The advantages are innumerable: it is the only region in the world that permits the production of two and a half crops per year, apart from being blessed with abundant water, a good climate and qualified labor. Ninety-six types of grapes are planted in the region and the wine produced is of the new type like the wine produced in California and Australia. Enterprises that complement the core business, such as glass, cork and packaging, are also being developed. The cluster has the support of the Government of the State of Pernambuco that has started to promote the Grape and Wine Festival, granted tax incentives to the producers and is building the 72-kilometer Grape and Wine highway, which will connect the provinces of Lagoa Grande and Santa Maria da Boa Vista passing, along the banks of the Sao Francisco river. Private initiative, for its part, has been

developing partnerships and the largest supermarket chain in the Northeast - Bompreço -, owned by a Dutch company, is carrying out several promotional ploys to encourage the sale of products from the region. Bompreço is also analyzing the possibility of manufacturing a wine with its own brand name together with producers

Based on the irrigated fruit-growing projects the Northeast expanded its agricultural activities by returning to traditional crops such as cotton which was highly significant in the Region until the 1940's, and implementing new crops such as soybean. The return to cotton production in the Semi-arid and Mid-Northeast areas is restoring the local fiber to the primary role it used to hold in supplying raw material for the textile industry installed in the region. Also, dependence on imported raw cotton by large Brazilian industries such as Vicunha and Santista Textil has fallen as they replace part of their foreign purchases with cotton produced in Barreiras and Luiz Eduardo Magalhaes, in the West of Bahia, and in Balsas, in the South of Maranhao. Another important industry, Textil Quatro K Group - one of the largest Brazilian manufacturers of tee-shirt material - entered into a joint venture with the government of Rio Grande do Norte to buy all the cotton produced in that state until 2004.

The fiber produced in the arid interior of the Northeast is of excellent quality possessing a longer staple and is more resistant. Attracted by the flat land, a high degree of sunshine and the favorable climate of the region, Agropecuaria Schneider Longemann - SLC, of Rio Grande do Sul, which shares the title of the largest Brazilian cotton producer with the Maeda Group, acquired 1,978 hectares in the province of Balsas in the south of Maranhao exclusively to plant cotton, together with a plant to gin cotton. Initially, the return to planting cotton in Balsas was meant to create a rotation with the soy crops however the results were so impressive that many producers redirected their investments. In 1997, SCL that was planting 500 hectares of cotton had expanded to 22 thousand hectares in seven different farms. With sales revenues of R\$150 million they also plant

Growth in the production of cotton and soybean in the Northeast

Cotton

Year	Production (tons)	Part. in national production (%)	Planted Area (hectares)	Part. in national production (%)	Productivity (tons/hectares)
1990	151.324	8,49	453.890	29,94	0,33
1991	216.843	10,62	342.313	22,90	0,63
1992	167.268	8,98	404.455	24,64	0,41
1993	112.841	10,01	278.778	27,30	0,40
1994	285.027	21,10	420.910	39,05	0,68
1995	171.522	11,90	373.428	33,29	0,46
1996	88.071	9,25	209.772	27,74	0,42
1997	129.539	15,77	270.801	43,46	0,48
1998	57.872	4,94	196.632	22,80	0,29
1999	104.750	7,09	146.516	21,35	0,71
2000	244.201	12,17	236.601	29,14	1,03

Soybean

Year	Production (tons)	Part. in national production (%)	Planted Area (hectares)	Part. in national production (%)	Productivity (tons/hectares)
1990	225.502	1,13	376.889	3,25	0,60
1991	451.887	3,03	216.485	2,24	2,09
1992	504.748	2,63	342.712	3,62	1,47
1993	682.746	3,02	426.132	4,00	1,60
1994	1.024.430	4,11	503.417	4,36	2,03
1995	1.255.571	4,89	571.085	4,88	2,20
1996	860.032	3,71	506.520	4,89	1,70
1997	1.275.616	4,83	585.108	5,08	2,18
1998	1.528.306	4,88	727.243	5,46	2,10
1999	1.641.753	5,30	779.133	5,96	2,11
2000	2.063.859	6,29	847.076	6,19	2,44

Source: IBGE

soybean and corn. Almost a half of the demand for cotton comes from the spinning plants installed in the state of Ceara which is the principal textile center in the Northeast. 47% of the 270 thousand tons of the region's estimated industrial demand for raw cotton is being supplied by local production that, according to Embrapa, corresponds for 85% of the total production of the Region.

Farmers around Barreiras, West Bahia, were responsible for restoring the cotton crops in the Semi-arid Northeast where the great flat prairies of the region allow for large partly irrigated plantations as well as mechanical harvesting. There are 25 provinces dedicated to cotton farming and this crop is catching up with soybean and corn. In the West of Bahia, on the western banks of the Sao Francisco river, large areas of under-populated barren land that were only being used for low density cattle raising and where the inhabitants used to make a living from planting small crops on the banks of streams

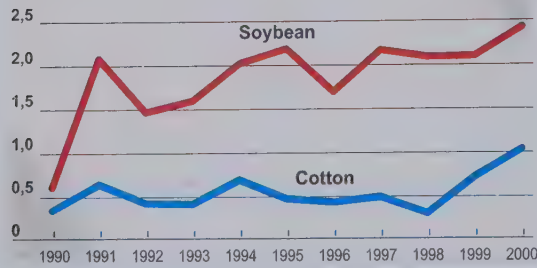
and river tributaries of the Sao Francisco have been settled by people from Rio Grande do Sul who have developed modern market-oriented and mechanized soybean farming.

In Ceara, small farmers took advantage not only of the climate but also the incentives granted by the state government to bring cotton back to the State. Ceara is the country's second largest cotton importer and the fourth largest textile nucleus. Paraiba and Rio Grande do Norte also boosted their production. The Northeast was a great cotton producer until the seventies, producing some 230 thousand tons/year. Good sunlight provided by the strong sun in the semi-arid northeastern land makes the fiber whiter, a feature that is highly appreciated in the international market.

The state of Paraiba has been successful with its colored cotton that fetches twice the price of regular white cotton. The goal is to certify the farmers from Paraiba as producers of colored organic cotton, that is, without toxic

Productivity in the Northeast

(tons/hectares)



Source: IBGE

agents, and this should add a further 30% to the price paid for the product. The relevance of the colored cotton lies in the fact that producers attend to the whole productive chain, from processing to consumption by the clothing industry. The province of Patos, in the hinterlands of Paraíba, is one of the largest producers of this type of cotton and should reach a production of 200 tons this year. Surveys regarding the organic production of cotton have been carried out for the last three years and its commercialization is expected in two years time. The Ecological Project for the Handling of Perennial Colored Cotton: Components for Organic Production, is already in the phase of plant demarcation and growth analysis as well as organic fertilizer, weed and blight control studies. The project is being financed by the Banco do Nordeste and the National Treasury.

In Piauí, farmers, mostly from Rio Grande do Sul, crossed the prairies that separated them from Bahia and spread throughout tributaries on the right margin of the Paraíba River. What were former cattle ranches started to be occupied by growers of soybean. Following the Gurugueia Valley these farmers arrived in the South of Maranhão and changed the reality of this State with soybean. The return to cotton crops, in Maranhão and Piauí, was initially meant to rotate with the soy. However the results were so surprising that cotton quickly caught the attention of farmers and businessmen.

With the recovery of the cotton crops the semi-arid Mid-North of the Northeast joined Brazil in the race for the "white gold", as cotton

is referred to. The real Brazilian cotton boom took place in the Midwest region and that is where most of the country's cotton production is found side by side with soybean. In this region, the Maeda Group, which expects to produce 23 thousand tons of raw cotton this year with revenues of R\$240 million, owns 15 thousand hectares of cotton in the states of Goiás and Mato Grosso as well as 22 thousand hectares of soybean. The harvest came to 74 thousand tons.

It was in the great prairies of the south of Mato Grosso do Sul that the farmer from Paraná, Alberto Schlatter, arrived in 1981 to plant soybean. In 1988, he decided to plant cotton and people said he was "crazy". Ten years later, Schlatter and his three sons were planting 5.5 thousand hectares of cotton in the province of Costa Rica, 350 kilometers from Campo Grande, with a productivity ratio of 310 sacks of 15 kilos per hectare (in the United States the average is approximately 160). In 2001, the Schlatter family won the Abit prize for the best supplier of raw cotton to industry and achieved revenues of R\$40 million. Now, at seventy years of age, Schlatter is getting ready for another challenge: the export of a large portion of his production.

Popular wisdom says that soybean is a lazy man's crop, all it takes is planting and harvesting, while cotton is a crop that requires technology, courage and much more investment. Schlatter, who did not even conclude elementary school, was the first farmer in the area to recognize the need for modernization. He invested R\$2 million in the purchase of a Lummus machine for ginning cotton and his harvesters are equipped with DPS, a system of sensors that monitors the quantities harvested. One of these machines produces the same as 400 farm workers.

Important players in the world's textile industry have already bought Brazilian cotton from the 2002/2003 crop. Three thousand tons of the product will start being shipped in June of 2003, a quantity that could increase to 100 thousand tons. This negotiation was helped by the Brazilian Cotton Lint 2002 project that

brought 17 foreign businessmen to Brazil, amongst whom were traders and industrialists from Thailand, Turkey, Italy, France, the Philippines, India and Switzerland. They visited farms in the regions of Palmeiras de Goiás (GO), Barreiras (BA), Rondonópolis (MT), Campo Verde (MT) and Costa Rica (MS). Together, these farms add up to more than 92 thousand hectares of planted area with an annual production of over 200 thousand tons. The project was coordinated by the Associação Brasileira dos Produtores de Algodão - Abrapa (Brazilian Association of Cotton Producers), with the support of the North American FMC Chemical Company and the Agência de Promoção à Exportação Brasileira - Apex (Agency for the Promotion of Brazilian Exports). Before 2006, another two missions comprising 70% of the world's largest cotton importers will come to Brazil.

The planting of transgenic cotton is starting to attract the large producers. However this issue

is still in the research stage. Commercial planting is banned in Brazil and awaits sanctioning by the Justice Department. Nevertheless, studies carried out by the Centro de Estudos Avançados em Economia Aplicada - Cepea, (Center for Advanced Studies in Applied Economy) show, by way of a theoretical simulation, that the planting of transgenic cotton can offer the Brazilian producer gains of up to \$157.91 per hectare, a 44.8% increase in the gross production margin for varieties that are subject to the blue blight and of \$20.06 for varieties resistant to that disease, taking into account a 10% productivity gain with the use of this technology. Research raised data regarding production costs in eight states pointing out the amount of insecticides applied. It then deducted from that value agrotoxins that fight blights to which transgenic cotton is resistant: *Bacil Insthuringensis* and *Ascia Monuste Orseis*.

The Maeda Group is also amongst those who are in favor of planting transgenic cotton.



The development of colored cotton started recently. The market potential is encouraging.

The group owns 49% of the capital of MDM, a seed company with head offices in Uberlândia (MG) is controlled by a partnership between Monsanto and Delta Pine, companies that, since 1997, have carried out studies on transgenic cottonseeds. Monsanto is investing R\$1.5 million in research on Bt transgenic cotton in Brazil. There are 30 ongoing projects into the efficiency of this technology, types of insects and social economical effects. Bt cotton carries the *Bacillus thuringiensis* gene, which has insecticide traits. Field research carried out by Monsanto and the Agronomy Institute of Paraná (Iapar) shows that Bt cotton reduces the cost of production by 25%.

Monsanto has an industrial complex in the state of Bahia, the largest outside the United States, focused on the production of raw material for herbicides. This is proof of the multinational company's interest in agriculture in the Northeast. \$550 million were invested in this project, \$176 million by BNDES and the old Investment Fund for the Northeast (Finor). With the production in Bahia, the Northeast and all of Brazil will be able to stop importing inputs that, in the past, were supplied by the Company's manufacturing unit in the United States. In this first stage of operations production is concentrated in PCL3 (phosphorus trichlorine) and DSIDA (phosphonomethyl iminodiacetic acid), substances included in the Roundup formula. The plant will be able to work at full capacity with the introduction of the production line for Glyphosate (Roundup's active ingredient), and Roundup itself produced in the company's unit of São José dos Campos, in the state of São Paulo.

Despite the cotton euphoria it was soybean that inspired thousands of far-seeing entrepreneurs and small producers from several regions of the Country, but especially from Rio Grande do Sul and Parana, to settle in the South of Maranhão in 1970. And the place they chose was the distant province of Balsas located 850 kilometers from Sao Luis, the state capital. Today, the bush country of Maranhao is going through a second wave of invasion by grain producers from the Mid South of the Country. The preferred location is the province of

Chapadinha, which is set in a region with at least 549 thousand hectares of arable land for rice, corn, cotton, and especially soybean. Chapadinha is located only 250 kilometers away from the Itaqui Port, in Sao Luis.

Since 1970, soybean has been expanding in Maranhao year after year. The planted area of the State during the 2001/02 crop grew by 32.5%. Production increased by 16%, to 529.1 thousand tons, compared to 454.7 thousand tons in the previous crop. It is expected that production will continue to rise. The increase in the planting of soybean in Maranhao is due to new producing areas - both in the south that responds for 98% of the planting and in neighboring regions. Producers have also improved their crops. Soybean is the flagship of agricultural production in the south of Maranhao where it responds for 70% of the grain. The product is shipped out of the port of Ponta da Madeira, owned by Companhia Vale do Rio Doce.

The efforts of the first producers in planting soybean in the south of Maranhao only started to bear fruit with the first shipments of grain to the foreign market in 1992. In 1974, the first farmers from the south of Brazil started to arrive in Balsas that was then little more than a village. Many were discouraged because they did not have immediate customers and there were no ways to transport the production. Others purchased land closer to cities. After a lot of struggling Leonardus Josephus Philipsen, a farmer from Rio Grande do Sul, requested the help of the soybean research center at Embrapa in the city of Londrina, Parana. The result was that researcher Irineu Alcides went to live in the south of Maranhao and he was the person that developed most of the varieties of soybean found in the Region. From there on soybean producers got together in the battle for better roads and infrastructure and managed to have Vale do Rio Doce transport the soybean through the Carajas railway to the port of Itaqui.

After opening a door to international markets with its agricultural production, the Northeast started opening space with a new product: farmed shrimps. Over a decade ago, shrimps

reproduced in farms became one of the most dynamic businesses in the region and increasingly attracted foreign capital. Investors from Ecuador, Chile, Argentina, Uruguay, and Portugal have already settled in the region placing their faith in a growing market. In the race for space, old salt flats in Rio Grande do Norte, abandoned sugar cane plantations in Pernambuco, and areas neighboring Bahia and Maranhao were transformed into shrimp farms. The climate, the availability of space and the absence of plagues make this region an excellent option for the business. The shrimp raised in the Northeast is served in the best restaurants of New York, Boston and other American cities as well as in European countries such as Spain, France, Italy, Portugal, Switzerland and England. In Asia, Japan is an important customer.

The Associacao Brasileira dos Criadores de Camarão - ABCC (Brazilian Association of Shrimp Breeders) reports that, in 2001, the production of farmed shrimps in Brazil reached 40 thousand tons, of which 37,575 (94%) were bred in the Northeast Region where breeding of shrimps has been developing rapidly since 1996. This was when the technical and economical feasibility of this particular agribusiness was consolidated by the introduction of a species imported from the Pacific coast, the *Litopenaeus vannamei*. With the national production concentrated in the Northeast, Ceara is ranked as the largest producer in terms of volume with 11,333 tons and shows the best productivity level with the exceptional factor of 7,000kg/ha/year. Other states follow in accordance with their relevance: Rio Grande do Norte (9,061 tons); Bahia (6,840 tons); Pernambuco (4,311 tons); and Piaui (2,112 tons). Outside the Northeast, the state of Santa Catarina, in the South Region, weighs in with 1,713 tons.

The contribution of farmed shrimps towards

Brazilian exports in 2001 reached \$107 million. The states of Ceará and Rio Grande do Norte are the export leaders with \$30.8 million and \$28.8 million, respectively, followed by Bahia and Pernambuco with \$20.7 million and \$18.3 million, respectively. According to ABCC projections, exports should reach 60 thousand tons in 2002, or \$160 million, and could reach \$500 million by 2005, with a production of 105 thousand tons.

The United States represent, by far, the largest import for farmed shrimps, it represents 45% of the volume exported by the Northeast of Brazil, which corresponds to 51% of the total amount of the sales of this product. France comes in second place with imports of 22% of



The production of shrimp farms had a remarkable growth in all the states of the Northeast.

the product and 20 % of the value of exports. Following, comes Spain with 18% and 16 % respectively, and the Low Countries that buy 11% of the volume exported, equivalent to 9% of the value exported.

Due to the climatic conditions that prevail in the Northeast, with its regular temperature and sunshine it is possible to grow shrimps all year round. This means that the offer of the product is characterized by all-year delivery that is not subject to the seasonal restrictions that are generally common amongst products in the primary sector. From the standpoint of the physical location of the production it is

important to stress that the shrimp farms are located close to coastal estuaries which makes harvesting the product for processing easier apart from allowing fast expediting to the main seaports and airports in the Northeast. The whole coast of the Northeast counts with an efficient network of paved roads in addition to an energy and communication infrastructure that contribute to the handling and transport to market of farmed shrimps. It is also worthy of mention that the proximity of the northeast seaports in relation to those in the United States and Europe is advantageous if compared to other producers in South America and Asia.

In this promising scenario large companies such as Nordeste de Aquicultura e Alimentação - Cina and MM Monteiro stand out. Both companies are from Ceara and are expanding their areas of operations by investing R\$1 million in a processing unit for shrimps and lobsters in the State of Piauí. Cina projects arriving at the end of 2002 with a production of 5 thousand tons of shrimps for export, an increase of 100% compared to last year's production. In Ceara, there are approximately 90 shrimp producers, many of whom are working in partnership with the large producers, like Cina, MM Monteiro and Compescal Comercio Pescado Aracatiense.

In Bahia, the Valença da Bahia Maricultura Company that belongs to the Montagem e Projetos Especiais (MPE) group, from Rio de Janeiro, is considered to be one of the five largest companies in the world and the largest single producer in Brazil. It owns four farms, totaling 1,250 hectares and it produced 7.5 thousand tons in 2001. Almost the entire production of farmed shrimps in Bahia is dominated by the companies Valença and Lusomar Maricultura - another large operator in the sector - the latter being located on the border between Bahia and Sergipe and owned by Portuguese investors that set up business in Bahia in 1998. Lusomar is concluding its production cycle with the construction of a new unit for the production of shrimp fodder located in the province of Simões Filho, in the Metropolitan Region of Recife. The Lusomar group intends to place

some 5 thousand tons of shrimps on the market. In Bahia, Lusomar also operates in the garment business and owns the Fiorelli Industria de Confecções Ltda. a plant with more than ten stores in Salvador. In Portugal, the group owns a fish distribution business.

Camanor, a company set up in the state of Rio Grande do Norte by the Swiss, Werner Jost, is another example. With five farms, it rounded off 2001 with a 385-hectare production area, and is expected to arrive at the end of 2002 with 6,550 hectares. This target is meant to comply with an agreement to supply the worldwide retail network of the French supermarket chain Carrefour. A pioneer in this business in Rio Grande do Norte, Camanor maintains a partnership with Diamante Branco saline for the breeding of the species, whereby Diamante contributes the land and Camanor the technology. Ecuadorians, the largest western farm shrimp producers, made a partnership with the Brazilian company, Equabras, and are also producing in this state.

In Pernambuco the Netuno group has been operating in the sector for 12 years and, in partnership with entrepreneur Sílvio Santos since 1999, has a farm, Maricultura Netuno, in Itapissuma, on the north coast of the State. It is presently installing its second shrimp farm in the state of Sergipe. The two farms will exploit the whole productive chain, from the larvae to the processor.

Since 1995, the Fernandes Vieira group, whose main activities are based in the hospital sector, entered the shrimp farming business and invested \$31 million in the Atlantis Project. Aimed at the production and industrialization of shrimps, the project comprises one producing farm, an industrial processing plant, and Aqualider Maricultura Ltda., a unit specialized in the production of larvae. Located on Tirri Island, in the municipality of Goiana, the farm has an operating area of 540 hectares of crawls. Its installed production capacity is 2 thousand tons per year. The processing plant, for its part, is capable of producing 2.4 thousand tons a year. Aqualider is located on the beach at Porto de

Galinhas and has a production capacity of 720 million specimens of larvae per year. It is the largest Brazilian laboratory and is amongst the 10 largest in the world.

The post-larva production is another segment that is expanding in the profitable shrimp farming business. Some years ago, the ones that existed just produced for their own consumption, and whoever else needed the product would have to gather it naturally. This used to be a problem because it was difficult to gather the desired volume and consequently it was hard to increase breeding in the crawls. It was the Camanor's laboratory, Aquatec, installed in Rio Grande do Norte, that changed that picture. The laboratory also became a supplier for small producers and this lent an impulse to farm breeding. A survey carried out in Brazil by ABCC indicates that there are 22 companies dedicated to the reproduction of shrimp and the production of post-larva in labs and that this activity produced 7.9 billion post-larva specimens in 2001 to populate 8,500 hectares of crawls. For 2002 the forecast is for a production of 14.7 billion post-larva units. The laboratories are well distributed throughout the Northeast. ABCC estimates that, in the Northeast, adding the areas neighboring mangroves, saline and deactivated fish crawls, there are around 300 thousand hectares fit for the expansion of the breeding of sea shrimps. The full use of these areas means an annual production of 1.5 billion tons and the generation of \$7.5 billion in revenues and 1.3 million direct and indirect jobs.

The Northeast is still the poorest Brazilian region. Its participation in the country's Gross Domestic Product is 13.11%. Its territory covers 1,542,000 square kilometers and includes the states of Maranhão, Piauí, Ceara, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe and Bahia. It is the Brazilian region that is closest to Europe and its geographic position, on a global scale, represents a valuable card in the sleeve. With an area smaller than 19% of the total Brazilian territory the Northeast has a population of 47,741,711 inhabitants, which is equivalent to approximately 29% of the Country's population.

39,975,425 are concentrated in urban areas and 14,766,286 in rural areas.

Its people are outgoing, hospitable and love dancing. In almost all big cities in the Northeast there are two Carnival parties: one at the beginning of the year when people dance for three days on the run along with the rest of the country, and another in the second half of the year when a late Carnival is celebrated. This is surrounded by a sort of contagious happiness that invades the souls of rich and poor alike to the sounds of the frevo - a traditional dance rhythm from Pernambuco - or the music of afoxes - a rhythm that originated in the Orisha religion in Brazil - and the drums of the Olodum - Afro-Brazilian music played by bass drums of various sizes - from Bahia, the bumba-meu-boi - a popular comic-dramatic dance which tells the story of the death and resurrection of an ox -, traditional in Maranhao. Groups of people play and laugh, and gather spontaneously in the streets, alleys and hills in all the northeastern cities. When it is not Carnival time there are the festivities of Saint John, typically found in the interior and that take place during the month of June. The states of Pernambuco and Paraíba compete as to which one hosts the best party, with giant fires, a lot of forró (the name of this dance originates from the English "For all") and a lot of xote - another musical style from the hinterlands - and typical food basically made of corn. On remote beaches on moonlit nights groups of men, women and children form a circle to dance and imitate the movement of the waves singing the old fishermen's songs.

This folklore, added to a rich tradition of handicraft and an exotic cuisine that has one of its best examples in the acarajé - an Afro-Brazilian delicacy of kidney bean paste fried in dendê palm oil - makes the Northeast a region totally different from the rest of Brazil. However, the element that most sensitively marks the region is the climate. Around 55% of the 1,542,000 square kilometers of its area are within the so-called Drought Polygon, with a semi-arid climate. It almost never rains. That is where the hinterland is located with its irrigated fruit clusters. Apart from the

Hinterlands, the Northeast has another three regions: the Zona da Mata, an area with rich vegetation near the coast line, with two well defined seasons - one rainy and the other dry - where the predominant crops are sugar cane and coconut; the Zona Agreste, an arid and barren transition area between the forest and the hinterlands where we find cattle raising; and the Mid-North that includes part of the state of Piauí and the whole of the state of Maranhão that has a hot and humid climate and grows soybean, cotton and rice.

As a large part of its territory is affected by periodical droughts, the Northeast has an ongoing concern with the rain forecasts for the following year. That is the dramatic reality of this part of Brazil, a feature that has been seriously challenging farmers for more than four centuries. Maybe this is the reason why devotion to religion is such a strong trait in the culture of the people from the Northeast who are always awaiting divine revelations. Despite all the technological advances that have reached there, these men and women trust in their saints more than anything else, especially two - Saint Lucia and Saint Joseph. Even these days it is not uncommon to find people from the hinterlands, on the night of the 13th of December, placing six salt rocks out in the weather representing the first six months of the following year. In the morning the salt rock that has been melted most by the dew indicates the rainiest month of the coming year. Another tradition is the belief that, if it does not rain until Saint Joseph's day, the 19th of March, the hinterland loses all hope of having a rainy year. These habits are followed by prayers and chants that echo in the distance in the deep of the night, similar to a Gregorian chant. It is a form of mourning that reflects the difficulties of the people from the hinterland, but it also erupts with joy when the first thunder showers fall. And, if the rains, the land is sowed.

It is exactly there, in the hinterland, that the most fertile soil of the whole Northeast is to be found. The Irecê lowlands, in Bahia, and the prairies of Apodi, in Rio Grande do Norte, for example, with their soils originating from

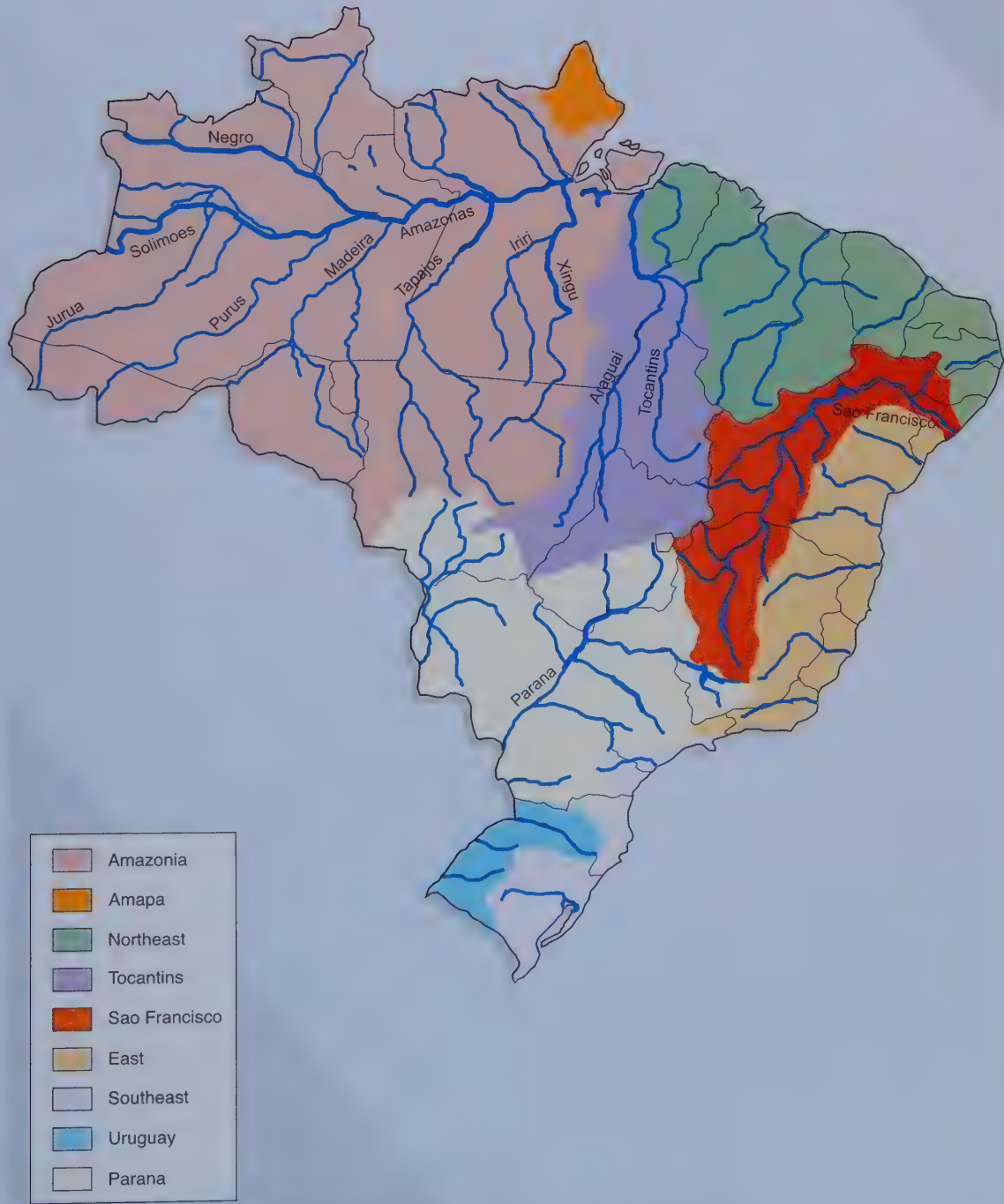
calcareous rocks, have excellent quality soil with no limits in relation to its use. They comprise some 105,550 square kilometers corresponding to 6.35% of the Region. In the interior of Ceará, in the region of Oros, and in the whole of the highlands of Pernambuco, sowable soil can also be found and is fine for agriculture although it does require appropriate handling in order to become economically productive. 447,486 square kilometers can be included in this ranking, which is equivalent to 26.91% of the territory in the Northeast. These are the richest lands in the region and are waiting for the displacement of the waters of the São Francisco and Tocantins rivers to provide irrigation.

As it is a region with low pluvial rates the soil in the Northeast is normally rich in calcium, potassium and magnesium, although not all the land can be used. There are, for example, large areas with problems of soil cover and salinity. These are lands with soils that are shallow and have a rocky base making them impermeable to roots or water (below 40 centimeters there is nothing but rock), and are absolutely inadequate for any type of crop. Planting in this area would reduce it to a desert. This type of soil, found throughout the whole of the Northeast, covers 780,346 square kilometers, that is, 46.92% of the total area of the Region.

It is exactly throughout these 780,346 square kilometers that we find the caatingas - a region in the hinterland characterized by thorny and stunted vegetation - with trees such as the branchy Umbra (Umbuzeiro), extremely resistant to drought and that remains green most of the year with its bitter and nourishing fruit - the umbu. The fruit can be eaten of the tree or it can be savored in a dish typical of the region - the umbuzada - a type of porridge where milk and sugar are mixed with the cooked pulp of the fruit. Whoever visits the Hinterland is delighted to find the shade of an umbra tree - the sacred tree of the Hinterland - and discovers that in the shade of the tree and sheltered from the scorching sun, one is able to hear the songs of native birds, such as plumbeous seedeaters (common name given to the sphorophila

HYDROLOGICAL BASINS.....

C.Ricky



Thw Sao Francisco highlighted at times of drought. Note the Araguaia-Tocantins basin that could be the source for some important solutions.
Sources: IBGE

plumbea), field doves, the *Columbia picui* (or *leptotila rufaxilla*) and that of the Picazuro pigeon. There is also the Juazeiro (*zizyphus joazeiro*), another robust tree that rarely sheds its deep green leaves and always bears golden flowers. The acacia (*Pithecolim tortum*) - or jurema as it is called in Brazil - is another native species with small leaves that shares the landscape of the region with the mandacaru (*Cereus jamacaru*), xiquexiques (*Pilosocereus Gounelli*), cabeças de frade (*Molecactus margaritaceus*), quipás (*Opuntia palmadora*) and palmatórias (*Urticales Moraceae*), cactus-like species that majestically survive the punishing droughts.

In the caatingas you will find cowboys dressed in their short leather jacket (gibao), guiding their unkempt herds of cattle to the nearest water source: a stream, a well, a dam, or a mighty river like the São Francisco. However, even if the soil of this region is inadequate for agriculture it is excellent for raising goats. Goats adapt very well to the semi-arid northeastern region and can almost raise themselves throughout the year. The people from the hinterland can lack almost anything but it is difficult to imagine one of them without a goat around. Because they are easily adaptable, tough, highly resistant and their meat, milk, skin, excrement, entrails and bones serve for a variety of uses, these animals have become a sort of regional mascot.

The Northeast has some eight million goats and 7.5 million sheep, respectively 89% and 48% of the national herds, according to data by the Caprine and Ovine National Research Center (Embrapa Caprinos). Due to the large farms that raise these species in the region the meat of these animals is starting to gain a more sophisticated status. According to Sebrae, over the past five years the consumption of goat meat has increased by 50% in this region and investments in slaughterhouses, genetic quality improvement, and meat processing are starting to take place. Items that go from the traditional ribs to smoked ham, hamburgers, sausages and meatballs made of goat and sheep meat can be found and are starting to be commercialized by large retailers.

Researchers at Embrapa Caprinos, Sobral (CE), estimate that the annual revenues generated only with the commercialization of meat in the Northeast, as a whole, range between R\$78.4 million and R\$98 million. Annually, around 1.6 million to 2 million goats and sheep are slaughtered in the Region. Of the estimated eight million goats and sheep in the northeastern herds, some 40% are matrixes. With the right handling these matrices could yield up to 4.5 million kids.

The genetic improvement of the regional herds, with an emphasis on the production of meat, has been increasing in the past ten years. Several businessmen saw the potential of goat and sheep breeding and started to import pure matrixes of races that provide high yields. That is the case of Luiz Felipe Brennand, previously a cattle and horse breeder who abandoned everything to become a goat and sheep breeder. He invested R\$1.5 million in the purchase of matrixes and the preparation of facilities dedicated to the supply of matrixes to regional breeders. He was the first breeder to import matrixes of the South-African race boer, some three years ago. This race permits the use of 48% to 50% of the carcass. The average gain in weight can range from 20% to 30%.

The Northeast is the Brazilian region that displays the largest climatic diversification and the greatest need for water. The total capacity for water in the existing reservoirs of the Region is of 85.127 billion cubic meters, of which 65.009 billion cubic meters, or 65.79%, are destined to the generation of electric energy. In the Semi-arid Northeast, only two rivers - São Francisco and Parnaíba - are perennial, excepting some small rivers in the central area of Bahia. In most hydrographic basins the rivers have intermittent flow routines thus only contributing water during the rainy periods. After the rain stops their flow-rate ceases due to the lack of ground runoffs. In the South of Piauí and in the West of Bahia, however, where the sedimentary characteristics of the geological structures and the rainfall provide conditions for ground runoffs most rivers are perennial. It should also

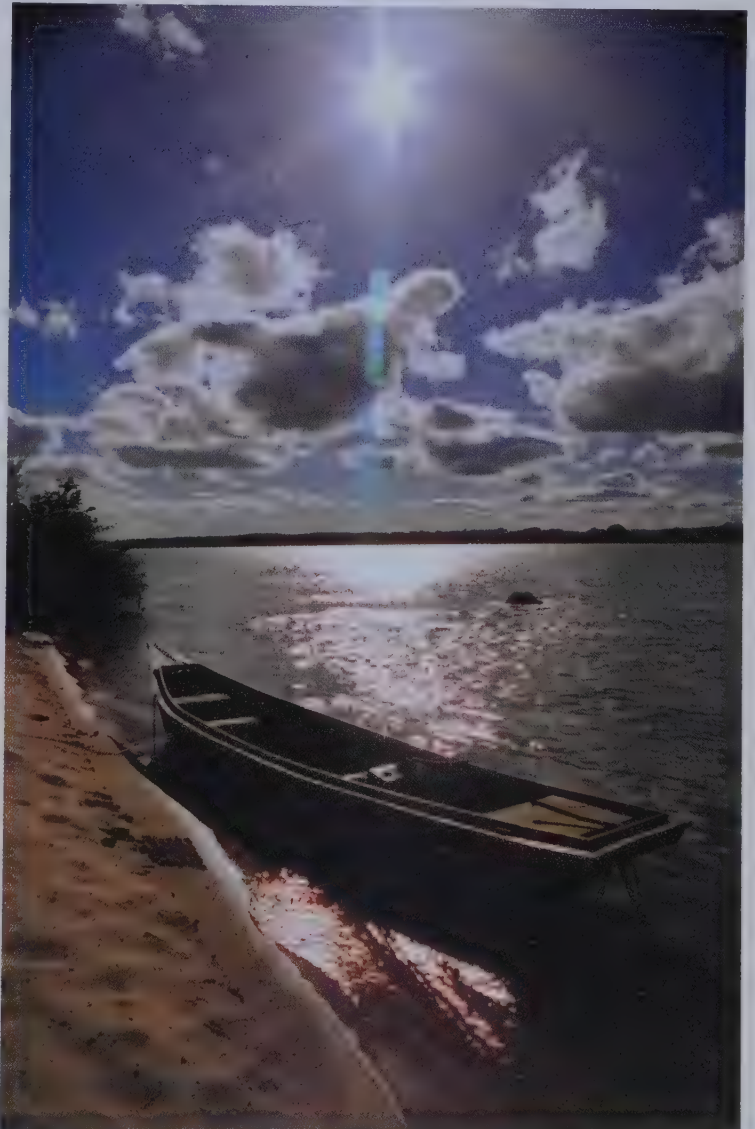
be noted that, in the Northeast, the surface hydric yields are extremely low, reaching only 1% to 3% of the rainfall in critical areas where the rainy conditions are unfavorable. This shows that from 97% to 99% of the volume of rainfall is lost through evaporation.

That is the reason why there is a need for the displacement of waters from perennial rivers. Currently, this transposition of river water is the subject of a lot of debate. It involves not only the public authorities but also the whole of Brazilian society. A part of this discussion involves the displacement of the waters of the Tocantins River - in the Brazilian Midwest - a matter that is starting to be analyzed as a supplement to the São Francisco river project. The displacement of the waters of the São Francisco river should cost the Brazilian government around R\$3 billion, whilst that of the Tocantins river, named as the Donor project, is budgeted at R\$1.4 billion and will serve only the Semi-arid area of the state of Bahia. The areas neighboring the Salitre river and the Lower Irece will not benefit from the displacement of the waters of the São Francisco. The waters of the Tocantins would also serve for restoring navigational to the São Francisco. There is also another project for revitalizing the São Francisco and the budget for these works has been estimated at approximately R\$10.2 billion. Considering the three projects this is the least feasible in financial terms.

The project for the displacement of the São Francisco river anticipates a redistribution of its waters to lands that are located far away from its riverbed in the states of Pernambuco, Paraíba, Rio Grande do Norte and Ceará, with an aim at increasing the offer of water to the portion of the northeastern population mostly affected by the drought, both for human consumption and for the indus-

trial and agricultural sectors, as well as for irrigation. However, at the same time as this project is defended by some sectors, notably the business and political classes, as the definitive solution for the water-related problems in the Northeast, it is resisted by specialists in the subject who never stop pointing out the losses that will incur from the execution of the project.

The headwaters of the São Francisco River are located in the Canastra mountain range, in Minas Gerais, and it then flows for 2,700 kilometers until reaching the sea between Piaçabuçu (AL) and Pontal do Peba (SE), in a 640,000 square kilometer basin, bathing the states of Goiás, Minas Gerais, Bahia, Pernambuco, Alagoas and Sergipe on the way.



A photo of river São Francisco, taken from the Rodeadouro Island, in Juazeiro, Bahia.

In reality, this great river traverses the drier areas of the Northeast. Close to its right margin, in Bahia, is located the famous "raso da Catarina" (Catarina lowlands), one of the driest and most unpopulated areas, inhospitable even for people from the hinterland.

Known as the river of national integration because it connects the Southeast with the Northeast, the Sao Francisco inspires a special feeling in all Brazilians. Its waters supply the Paulo Afonso Waterfall, the first plant to generate electric energy in the Northeast. For the natural beauty that can be seen on postcards portraying beautiful sunsets, the Sao Francisco is warmly called "Old Chico" (Chico being the abbreviation of the name Francisco). In other words it is not just a river; it is a symbol in the life of Brazilians; it is an old friend that never tires of providing water to those who are thirsty, of irrigating the land for the production of food or generating energy to guarantee the future of the region.

Along its course, the São Francisco traverses 500 municipalities and along its way it has left many legends amongst the people who live near its banks and many recipes for cooking its most famous fish - the surubim (fish of the Siluridae family). In olden days it was possible to navigate its waters on large boats similar to those on the Mississippi that were called steamers in the northeastern interior. These boats used to leave from Pirapora, in Minas Gerais, and arrived at Juazeiro da Bahia transporting everything: the poor and the rich, food and drink, illusions and hope. On the bow, they exhibited the head of a monster carved in wood - the carrancas - to frighten the bad spirits and fend off misfortune. A still respected legend says that the São Francisco sleeps at least once a year. Even the waterfalls cease at this magic moment, at midnight on an uncertain and unknown day, and whoever drinks its water at this time will have bad luck. Popular wisdom dictates that when the night starts to fall on the waters of the Sao Francisco it is good to throw a small branch in the water. If the current drags the twig downstream the person will enjoy a problem-free life.

Four of the eight northeastern states will

benefit directly from the project - Ceara, Paraíba, Rio Grande do Norte and Pernambuco - through two axis: North and East. For the North axis, the interconnection of the river, is planned for the province of Cabrobo (Pernambuco) in the direction of the basins of rivers Jaguaribe (CE), Apodi (RN) Piranhas/Açu (PB and RN), is anticipated. For the East axis, the river will be interconnected at the Itaparica dam, in Pernambuco, to the basin of river Paraíba (PB), also servicing the basin of the river Moxoto (PE). On the Northern axis, the geographic difference in levels reaches 190.35 meters and on the East axis, 308.74 meters. This requires the installation of 11 elevation plants to displace the water. More than 200 municipalities in the area will be affected by the project and six million people will receive the benefits. It is anticipated that the maximum outflow of the project will be 89 cubic meters per second (north axis) and 10 cubic meters per second (east axis) with a further 28 meters in Pernambuco, totaling an outflow of 127 cubic meters per second. When the project is finished the average outflow will reach 50 cubic meters per second.

The idea of taking water from the Sao Francisco to dry areas in the semi-arid Northeast dates from 1852, when Brazil was still an Empire. Emperor Pedro II, left his sovereign residence, in Rio de Janeiro, one day to make a quasi-heroic trip to the interior of Brazil and he even bathed in the clear waters of the Sao Francisco. In 1856, the Baron of Capanema commanded a Scientific Commission for the opening of a channel that would connect the Sao Francisco River to the Jaguaribe River, in Ceara. The project was not developed but reached the Republic under the name of the Strategic Plan for the Semi-arid lands and was drafted in 1908 by Euclides da Cunha who concluded the plans for the displacement of the São Francisco. However, in 1919, new studies concluded that the project was unfeasible. The issue surfaced again, in 1994, when the Ministry for Regional Integration recommenced the studies and drafted a basic engineering project for works on the small stretch between Cabrobó and Jati. In 1997, the government of Fernando

Henrique Cardoso started to work on the feasibility studies.

In order to reinforce decisions about the project, Environmental Impact Studies (EIA-Rima) were contracted and subsequently presented by the consortium Jaako Poyry-Tahal. The Ministry for Regional Integration report on the Environmental Impact considers 38 of the 49 impacts analyzed as negative. However, it qualified the projects as "environmentally feasible" provided they were carried out in conjunction with the compensatory measures proposed in the Environmental Impact Study (EIA). Two of those impacts were considered as irreversible by the consultants: the deforestation of 430 hectares for the execution of the works, and the alteration of the areas destined to its implementation. There will be a loss of native vegetation, extinction of the habitats of fauna and changes in the quality of the river water and life forms. Amongst the positive effects are the generation of jobs and income in a poor area, reduction in diseases and deaths caused by the drought, and a decrease in rural exodus. Five thousand direct jobs should be created for the duration of the works and it is possible that the number of indirect jobs created after its implementation reaches 620 thousand. The report also anticipates that amongst the negative results will be a loss of 137MW/hour in electric energy generation estimated at R\$75.6 million a year.

More than a hydraulic engineering project, the displacement of the São Francisco river also requires some serious political engineering as some states, especially Bahia, feel jeopardized. In an attempt to solve the issue the national Congress has carried out several negotiations and public hearings, and it is already common knowledge that agreements will have to be signed between the northeastern states in order to make the execution of this project feasible since regional and state interests are at stake. Agreements of this sort were also needed in the United States when displacements occurred. The one in the Colorado basin is an example.

Ceara is one of the States that is most engaged in the project and has prepared itself

to receive the waters from the Sao Francisco. As 75% of the 146.3 kilometers of its landmass is made up of subsoil composed of crystallized rock that does not hold water, and there are no perennial rivers of note, Ceará resorts to the construction of dams like the Castanhao in the Jaguaribe basin that will hold 6.7 billion cubic meters. This is three times the size of Oros - the country's largest dam - which is also located in Ceara. The first dam in the State was built in the last century in Quixada, 150 kilometers from Fortaleza, and it was built using slaves who built its walls with stones that were held together using glue from whale oil. The Castanhao project has been on the drawing board for a long time. The first feasibility studies were carried out in 1911. Budgeted at \$200 million, the works are in their final phase and the reservoir will act as a huge capturing device for the water that will be diverted from the São Francisco River. It will cover 32.5 thousand hectares of land and will benefit 2.6 million people, apart from guaranteeing the supply of water for the metropolitan area of Fortaleza and the Lower Jaguaribe region.

The São Francisco River comes to the end of its journey through the Northeast in the town of Piaçabucu, the last city on the southern coast of the State of Alagoas and located 183 kilometers from the capital Maceió. The mouth of the river is simply a remarkable scene. It is something unforgettably spectacular and lies in

Estimated amount of investments until 2007

State	Amount US\$ million
Ceará	709,90
Bahia	706,40
Rio Grande do Norte	551,10
Pernambuco	176,40
Piauí	56,70
Maranhão	35,00
Paraíba	20,00
Alagoas	17,00
Sergipe	5,60
TOTAL	2.278,10

Source: Datainvest - G. M. Information Center



Sauípe on the Bahia coast is Latin America's largest resort with four theme villages and five hotels, two of which are 5-star.

one of Brazil's richest ecological parks. On the other side of the river in the State of Sergipe, in the town of Pontal do Peba, there is a lighthouse that is a witness to the pioneering spirit of Brazil's second emperor, Pedro II. It was built and inaugurated by the Baron of Cotegipe on the emperor's orders.

The place where the São Francisco flows into the sea is a good starting point for getting to know the beaches of the Northeast that are attracting so many investments in the tourist industry. Traveling up the coast in the Northeast, one can find hundreds of deserted beaches that emanate tranquility from their native forests, lagoons, sand dunes, and the fishing villages basking in the shade of coconut trees. This offers a realistic feeling of adventure to whoever travels this route that is both beautiful and bucolic at the same time, bucolic. Although there are paved highways, the traveler can opt for trails that often lead to rivers and lagoons that are crossed on small motor-driven ferryboats. People who simply adore nature and are not concerned with comfort can camp out or stay

in overnight accommodation. The more demanding will find large tourism complexes with international class hotels. Whatever the option, there are some items that should not be forgotten: tennis shoes, short pants, tee-shirts, hats, sunglasses, sun protection and lots of drinking water. This is the best way of experiencing the same emotions that were felt by the Portuguese, Dutch and French when they first set eyes on this region in the sixteenth century. These same foreigners are once again arriving on the coast of the Northeast searching for new discoveries and business opportunities.

The Sauípe Complex located on the Costa do Coqueiro, (the coconut coast) in the north of the State of Bahia is a good example. It is the largest resort in Latin America with more than 16 hundred apartments distributed amongst four theme areas and five hotels of which two are five star and three are four star. The resort also has an 18-hole golf course, 15 tennis courts, an equestrian center and an artificial lake. Total investments came to \$255 million, of which \$40 million were financed by

the government of the State of Bahia through funding from Prodetur. It has been fully operational for the last year and the performance of the resort, that counts on the expertise of operators like Accor, Marriott, Superclubs and Sauipe Hotels and Resorts, is surpassing expectations. Average occupancy in the first quarter of 2002 was 46%. This translates into 32 thousand guests, 132,000 overnight-stays and 720 apartments occupied per day. The area where the resort is located is surrounded by coconut trees and, just to the north, there is a place called Mangue Seco that was immortalized by Jorge Amado in his classic novel *Tieta do Agreste* and adapted for cinema by Caca Diegues.

Porto Seguro, in the south of Bahia, is one of Brazil's largest centers of tourism and combines the beauty of its beaches with historical relics. The small coastal town of Porto Seguro possesses the largest hotel infrastructure in the Northeast of Brazil - more than 40 thousand beds - and there are a number of important investments under way such as Brazil's third Club Med in the nearby village of Trancoso. This 250-room project counts with the participation of the Chap Chap construction group who are responsible for 50% of the 22 million dollar investment. The other half was financed by the Banco do Nordeste (Northeast Bank) and the BNDES (the National Bank for Social and Economic Development). Club Med already operates a hotel on Ilha de Itaparica, an island also in the South of Bahia, that has 330 rooms, a golf course, tennis courts, art studios, a circus school and aquatic activities.

This region also boasts projects such as the Terravista Complex that called for investments of \$200 million and the Coroa Alta Complex, a resort with 310 luxury apartments and a convention center for 1200 people. Investments here were \$60 million and came from a partnership formed between Multiplan and the Bozano Simonsen Bank. Just 22 kilometers from Porto Seguro, in the town of Santa Cruz da Cabrália, we find the Porto Pero Vaz complex that has 35 luxury apartments, a satellite based telephone system, helicopter service for

sightseeing trips, an equestrian arena and dressage area and a marina. Investments here were R\$10 million.

Bahia holds a fascination that never ceases to attract people. It is the richest State in the Northeast and its capital - Salvador - with its religious and cultural synchronicity is the Brazilian city that pays most homage to its African roots. The black element can be found in all kinds of cultural symbols and the writer Jorge Amado is the greatest protagonist of this culture. It is also the Brazilian state where we find the highest level of self-esteem. Better than Bahia? Only Bahia. This would appear to be the driving force of the people of Bahia who believed in the potential of tourism and created opportunities for large investments. The French hotel group Accor, Brazil's biggest operator in this sector, is planning to open an up-market unit under their Novohotel flag in the center of Salvador. Another of the group's projects - the Cosmopolitan International Business Hotel - will occupy 8 thousand square meters and require R\$33 million in investments. The Accor group's plan for expansion in Brazil foresees an expansion that will sum up 134 projects by the end of 2002. This means that the company will double its real estate assets and will be administering total investments of \$800 million, of which \$80 million refer to investments of the company's own capital.

The Lebram Group that are active in the civil construction and incorporation sector has created a Hotel Division that is responsible for two large projects. The first is the implantation of the Holiday Inn Select Bahia, (Bass Hotels and Resorts Inc.), with investments of \$22 million, and the other is the Eco Resort Guarajuba, a R\$100 million project. Holiday Inn arrived in Brazil in 1975 and by 2003 the group will be operating 50 hotels with an overall investment of approximately \$500 million. According to the Bass company, 80% of the new establishments will bear the Holiday Inn brand name. The construction companies are responsible for 70% of the investments and the hotel companies for the remaining 30%.

New projects in the Northeast region don't stop at this. In the State of Ceará just the Camocim Glo-

bal Village complex, that is arriving to compete with famous world tourist destinations like the Caribbean and the Mediterranean, will absorb \$412 million of investments over a ten-year period. The project includes the construction of 40 units divided amongst hotels, inns, flats and residential condominiums in an area of 10,000 acres in Camocim, which lies 359 kilometers from Fortaleza. The complex is intended to have 8,940 rooms with 27,000 beds and is the result of an association of three Italian groups and a Swiss group. It started to be conceived five years ago with the constitution of the Marilha Holding Company and has already consumed \$20 million. Total investments will come to \$800 million. The Boa Vista Resort, on the Jericoacoara beach, in the west of Ceará, was the

apartments, a spa and an artificial lake for water sports. Near to the beach called Presídio, where there is already an aquatic theme park, the construction of eight hotels and six inns, to be called the Praia Bella Resort Village, and that represents an investment of \$500 million, is also planned.

In the State of Pernambuco, it is the South coast that attracts attention. Various groups interested in spending \$123 million in resorts are vying for its most famous beach Porto das Galinhas, in the municipality of Ipojuca, 50 kilometers from Recife. SAD a Portuguese/Brazilian company is intending to invest R\$34 million in the Ipojuca Beach Resort that should start operations in October 2003. The resort occupies

six hectares, will have 256 apartments, a complete health spa, an aquatic park, tennis and volleyball courts, a convention center for 600 people, a small shopping mall, and a helicopter pad amongst other attractions. The first group to invest in this sector was the Recife company, Pontes Hotéis that, two years ago, inaugurated the Sumerville Beach Resort, with investments of R\$48 million and 280 apartments making up the project. Another group from Pernambuco, Meira Lins, is developing a project near to the Sumerville with



The Jericoacoara beach, in Ceara, where the professional exploitation of tourism started a few years ago.

first luxury hotel raised by the group.

The coast of Ceará boasts the most beautiful beaches in the Northeast, and the State, aware of this privileged position, has prepared itself to receive the tourism industry with open arms. It is already obtaining results. Near to the beach of Canoa Quebrada, for example, the Barcelo Oasis, Praia das Fontes, was inaugurated by a group from Portugal. In 2003 this same group will start the construction of two more five-star hotels and a group of flat condominiums on the Morro Branco beach, 80 kilometers from Fortaleza. Before the end of 2003, Superclubs will inaugurate a unit on the Cumbuco beach. The building will have 250

investments of R\$40 million and 280 apartments. The Portuguese group Sonae, headquartered in Lisbon, is also planning a resort in Porto das Galinhas.

A destination for both Brazilian and foreign tourists, the name Porto das Galinhas dates back to the times of slavery when slaves - "galinhas" (hens), as they were called by the pirates -, were put ashore secretly. Near to Porto das Galinhas is the paradisiacal beach Muro Alto (high wall) that was so named because it is a strip of beach with clear blue waters protected by a wall of reefs. The Blue Tree Park hotel chain that belongs to the Chieko Aoki Management Company chose the Beach of Suape in the

municipality of Cabo de Santo Agostinho, 34 kilometers from Recife, to install the Blue Tree Santo Agostinho Resort, with 204 apartments. This involved an investment of \$30 million, of which \$21 million came from the Caixa Econômica Federal Pension Fund and the rest from Aoki Corporation and Ipojuca Participações.

In the State of Alagoas the Jatiuca Resort, inaugurated in 1981, was one of the first to arrive on the Alagoas coast offering an infrastructure of a wide range of activities for the guests and thereupon was considered to be the country's first resort. Located in Maceio and built in an area of 62 thousand square meters it is controlled by Pernambucanas Financiadora S/A and, in 1994, received investments of \$1 million for refurbishments and expansion to compete with the Meliá Maceió and Natsubara hotels that were inaugurated in 1990. Sol Melia, a Spanish operator, arrived in Brazil in 1990 with the aim of making the country the center of the group's business development in South America. The group also has hotels in Salvador, in the State of Bahia, and in Recife, Pernambuco.

Another project in Alagoas, Ondazul, is presently being implemented. A local group went into partnership with several international companies for investments calculated at \$170 million. There will be three hotels, a village and other attractions. It is located on the State's north coast and should receive 7.2 thousand tourists a year. Nearby is the Maragogi tourist complex with luxury hotels, such as the Salinas and the Maragogi.

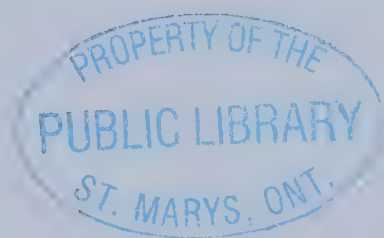
In the State of Rio Grande do Norte, the Via Costeira Complex is already attracting foreign investors. The Portuguese group, Pestana, took the lead when it opened the state's first hotel with an international flag, the Carlton Natal Hotel that required an investment of R\$20 million. The Carlton could have the company of a Catalan group that is studying the construction of four units nearby. The Via Costeira Complex is projected for 21 hotels, three restaurants and a service shopping mall. This is where the Ocean Palace is located and is considered to be the most sophisticated hotel in Rio Grande do Norte, with its 152 apartment, a business center, infrastructure for leisure and

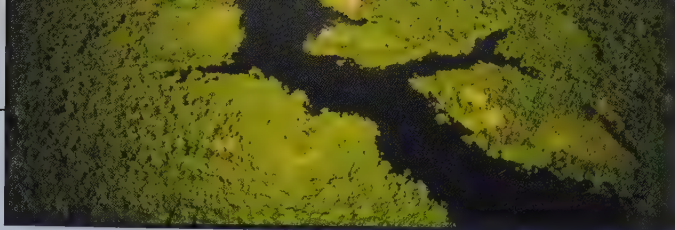
recreational activities, amongst other attractions. The Via Costeira already counts with 11 functioning hotels from where visits can be organized to city beaches, such as Ponta Negra, Areia Preta, dos Artistas and do Forte, or to more rustic spots like Tibau do Norte, which is a peaceful fishing village that is almost deserted for nine months of the year and packed with tourists in the summertime.

Natal, the capital of the State of Rio Grande do Norte, has one of the best living standards of all Brazilian cities. Its sand dunes are famous worldwide and surround the beach of Genipabu to the north of the city. However the State's coastline possesses another jewel located in Tibau do Sul, 50 kilometers from Natal. This is the Pipa beach. More than just a beach that elegantly boasts cliffs, beautiful views and ecological reservations, the old fishing village is a place that mixes the beach cultures of the Northeast in a rustic and refined way. To arrive in Pipa at night is, to say the least, surprising: the main street takes on a different atmosphere with its colorful bars and restaurants, many of which belong to European adventurers that went there to get to know the place and ended up by staying and incorporating their customs to those of the local population in a true demonstration of globalization.

In this way, encrusted between the sea and the semi-arid lands of the interior, the Northeast is conquering the hearts of Brazilians and foreigners alike, at the beginning of this new century, and proving itself to be a region that is open to large investments. The first pages of Brazilian history recount this fact: in the 16th century, more exactly in the year 1500, Pedro Alvares Cabral on discovering Brazil, stepped ashore in Bahia, more precisely in Porto Seguro. The fleet's scribe, Pero Vaz de Caminha, who was accompanying Cabral, wrote to King Manoel, at the court in Portugal, that they had discovered an amazing land. In the letter, that is the only testament of the discovery of Brazil, Caminha says "This land, my Lord.... is all beaches and very pretty.... it is of such beauty that, in wishing to enjoy it, anything is possible".







A country that straddles two hemispheres

The Northern Region of Brazil covers 3.8 million square kilometers and this represents almost a half of the country's whole territory. It has a population of 12.4 million inhabitants, of which 62.3% live in the cities. Geographically included in this region are the states of Acre, Amazonas, Rondônia and Roraima, in Western Amazon, and the states of Amapá, Pará and Tocantins, in Eastern Amazon. A part of its territory is located north of the Equator; therefore it can be said that Brazil is a country that straddles two hemispheres. The region is located between the Guyana range of mountains to the north and the Central Highlands to the south, the Andes mountain range to the west, and the Atlantic Ocean in the northwest. Known to be the world's largest tropical forest the Amazon also offers tremendous potential for investments in sectors such as the agriculture-lumber industry, tourism, bio-industry, handicrafts, fish breeding and natural products.

In the midst of all these natural resources the region is also a center for the manufacturing of sophisticated finished products such as components for the electronics, motorcycle, metal, chemical and information technology industries. The Amazon offers a number of advantages if compared to other regions in Brazil, such as its vast variety of ecosystems, mineral resources and abundant

fishing, natural biodiversity, breathtaking scenes of natural beauty and a strategic location in regards to some of the world's main markets. The path that is being pursued is one of maintaining all of this natural diversity whilst, at the same time, adding value to forest products and taking advantage of the potential that the Amazon represents, especially for overseas markets. Meanwhile, the government is dedicated to changing a negative image that has been formed of the region due to allegations of fraud and corruption. These unresolved cases led to the extinction of the former regional development agency, Sudam, substituted by the Agência de Desenvolvimento da Amazônia - ADA - (The National Agency for the Development of the Amazon), an entity that insists upon more rigorous procedures for granting resources to companies that intend to settle in the region.

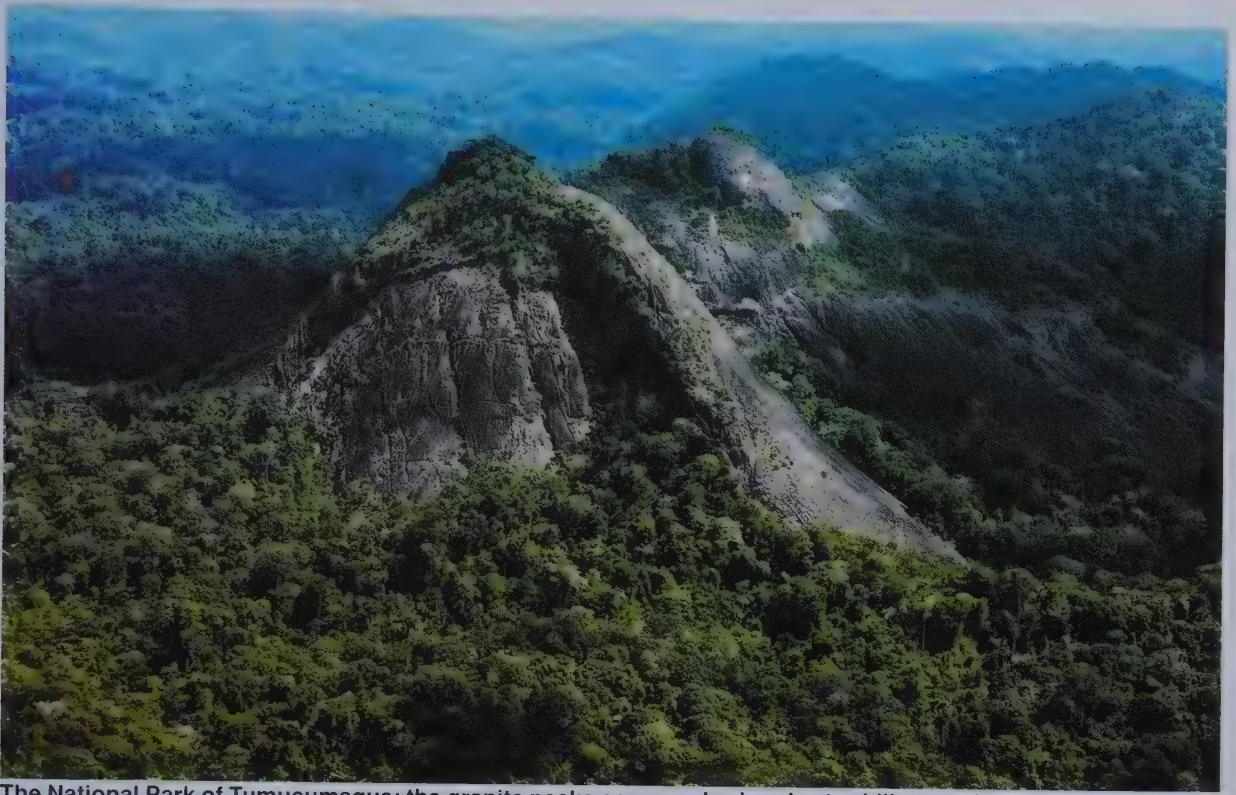
The whole of Brazil is in agreement when the question is preserving the natural resources of the Amazon. Official projects include the creation, by 2010, of 50 million hectares of new National Forests (Flonas), an area the size of Spain. Another 25 million hectares will be established as Biological Parks and Reserves. In terms of the tropics this is an innovation and can only be compared to the creation, in 1908, of the National Forest Program

in the United States, according to researchers at the Instituto do Homem e do Meio Ambiente da Amazônia - Imazon - (The Amazon Institute for Mankind and the Environment). The creation of Flonas will protect at least 10% of the Brazilian Amazon against deforestation. Combining, Flonas, and the existing protected areas that represent 28% of the Brazilian Amazon with the government's intention to create approximately 25 million hectares of Fully Protected and Conserved Units (5% of the region) "will place Brazil amongst the countries that are currently the leaders in the conservation of the world's natural resources".

Researchers at Imazon affirm that these measures can provide "the last chance for Brazil and the world to develop a sustainable and large productive system for tropical forests whilst, at the same time, they guarantee a meaningful conservation of biodiversity and environmental services". At the beginning of September 2002, president Fernando Henrique Cardoso signed, in Johannesburg, during the World Summit on Sustainable Development (Rio + 10), a joint agreement for the creation of ARPA - the Protected Areas of the Amazon - a public commitment to protect at least 10% of each type of Brazilian forest under the regime of Fully Conserved and Integrated Units. Currently, federal



An aerial shot: framing sky, forests and waters.



The National Park of Tumucumaque; the granite peaks command a jungle straddling two hemispheres.

parks and reserves protect only 3.25% of the Amazon and the purpose of the implementation of the ARPA is to triple this area. A good example of this is the recent creation of the Tumucumaque Mountains National Park, with 38,867 square kilometers, in Amapá, considered to be the world's largest area of protected tropical forest. The Tumucumaque borders the Guianas and most of it lies in the Northern Hemisphere.

The implementation of these Flonas is intended to reduce the conflict between conservation and social development as they will offer benefits to the local economy and also preserve the biodiversity. The Flonas are conservation units of sustainable use that will coordinate the production of goods, (lumber and non-lumber products), and the maintenance of environmental services. Expanding the Flonas system will help reduce the negative effects of development programs such as *Avança Brasil* that are dramatically changing the forecasts of forest destruction and degradation based on pre-existing models for development. It should also prove to be the most promising alternative for the government to prevent the migration of lumber-mills to the deserted areas in the West of Pará and the Southeast of the State of Amazonas that will

inevitably provoke "the recurrence of the predatory model of the use of forest resources and the privatization of public land" in this region.

In Pará, government is supporting agro-industry, the verticalization of mineral production and the exploitation of tourism as the basis for the development of a State that expects to receive private investments of about R\$19 billion in the period from 1998 to 2005. In agro-industry, for example, new products are being incorporated. One example can be found in shoes, an industry that is starting to take advantage of the large quantity of leather existing in a State that currently boasts the Country's fifth largest herd of cattle, 11 operating slaughterhouses, and more under construction. Vehicle parts, such as seats, are being produced from coconut fiber supplied by communities on the Island of Marajó and the northeastern region of the state. In the production chain of palm oil, where Pará is the largest national producer, the Agropalma group has already invested \$150 million to produce not only oil but also margarines and vegetable creams.

The sustainable exploitation of the huge lumber potential of the Amazon region - just in the State of Pará gross revenues of this sector reached \$1.026 billion in 2001 whilst generating 50 thousand direct

jobs and another 100 thousand indirect ones in the transport and processing of lumber - is now a reality that grows day-by-day. To ensure sustainability handling has to be economically feasible, ecologically friendly and socially accountable. For such, forestry certificates are a pre-requisite and these are based on an independent auditing process that uses previously determined criteria and indicators in order to check whether the forest of a certain company is being managed in compliance with the basic principles of good handling. The Council for Forest Handling - the FSC, sets out the standards for this certification in Brazil. Forest handling was nonexistent in the Amazon in 1994. However, in 2001, it already exceeded 300 thousand hectares and amounted to over one million hectares in the whole of Brazil, of which one third corresponds to forests certified in compliance with the FSC standards. Although this can be considered as significant progress, the number is still very small as certified lumber still only represents less than 5% of the regional production.

Forest handling has been growing due to international pressure on the part of environmental groups and buyers and also due to better prices being paid for certified lumber. Cikel, a lumber-mill in Pará that has the largest area of native forest

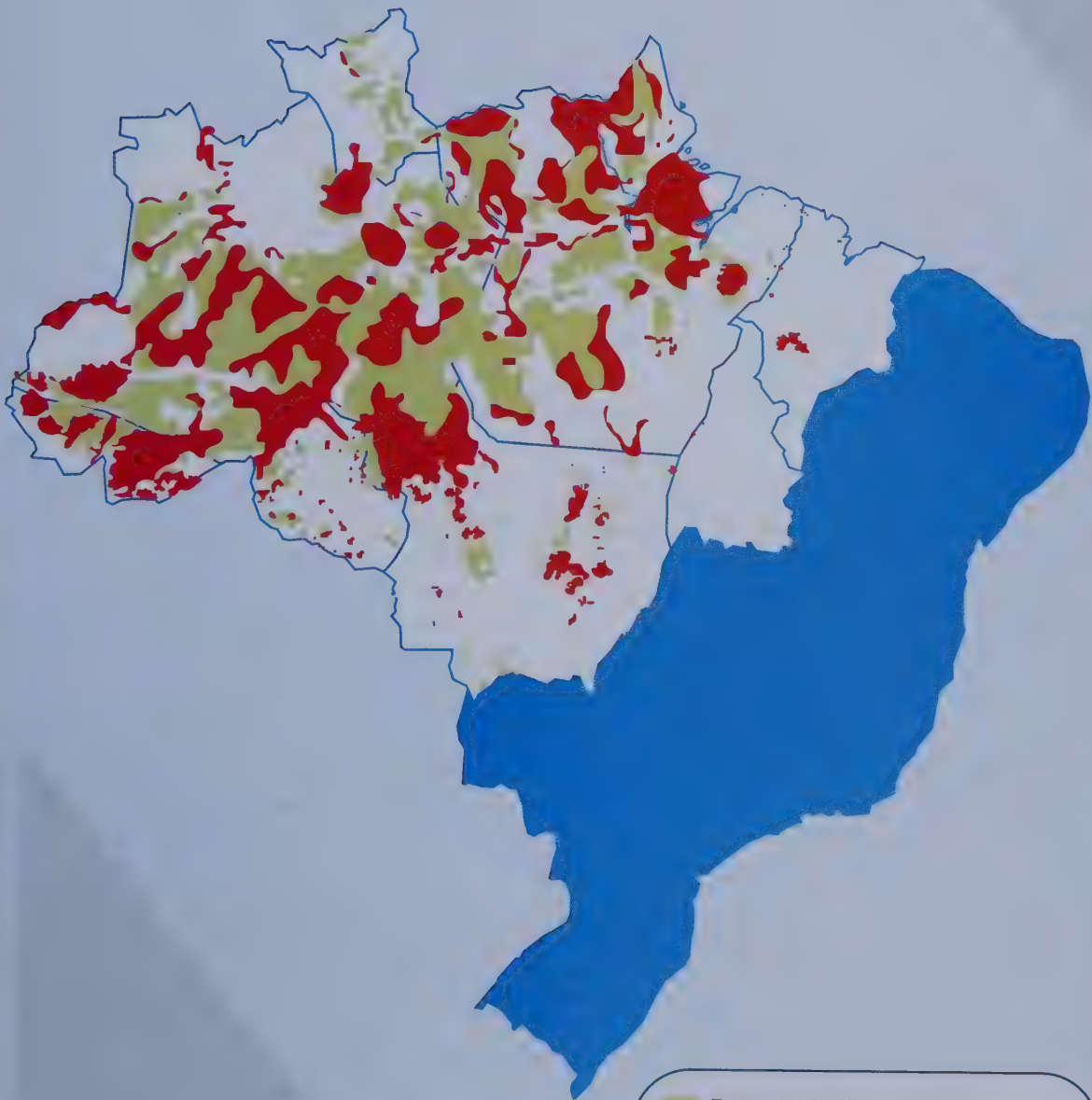
certified by the FSC in Brazil - 140 thousand hectares in the province of Paragominas - is selling its products at prices 30% higher than the market price for non-certified lumber. However, differently from what one could imagine the pressure for certified lumber does not come only from foreign countries. A study carried out by Imazon, the NGO Friends of the Earth and the Institute for Forest and Agricultural Handling and Certification (Imaflora) shows that the State of São Paulo, the world's largest consumer of lumber extracted from the Amazon, has a 1.2 million cubic-meter potential demand for certified lumber, which is equivalent to some 20% of the 6.1 million cubic meters of Amazon lumber consumed in 2001 by industries in São Paulo.


Natural resources are the basis of the Amazon's search for alternatives to the State's economic dependency on the Manaus Tax Free Zone - ZFM - the capital city is responsible for 98% of the collection of Value-Added Tax on Sales and Services (ICMS). Nevertheless this generation of revenue in the ZFM has permitted the conservation of the surrounding forest and allows the government to make an attempt to take sustainable development to the interior. A study conducted by the Getúlio Vargas Foundation on the economical potential of the Western Amazon indicated that the processing




Recovery of mahogany extracted from protected areas and indigenous reserves, in Altamira (PA).

THE RECOGNIZED BRAZILIAN AMAZON



 Potential for flora without a conservation priority

 Potential for flora with a conservation priority

of guarana, (*Paullinea sorbilis*), the exploitation of low density wood, fish breeding, the production of cassava starch and the manufacturing of pre-shaped lumber as products with a high market potential. In the past five years, the Superintendência da Zona Franca de Manaus (Suframa) invested R\$129 million in the interior of the State in an attempt to make these activities economically feasible.

Currently, the Amazon finds itself on the "soybean route" because of the port of Itacoatiara, 270 kilometers from Manaus, a facility that is able to manhandle 5 million tons of this grain per year. The soybean passes through Porto Velho and arrives at the grain terminal by way of the Madeira River waterway and from there it is shipped overseas. As to ecological tourism, the Program for the Development of Ecotourism in the Amazon (Proecotur), developed by the Ministry of the Environment in partnership with the state governments, is investing \$13.8 million in the first phase of a program intended to unite the attractions of the forests with environmental preservation and the generation of revenue. Progress can already be noticed; in the past four years, the number of tourists attracted by sport fishing increased by 40% a year.

The Program for Sustainable Development (PDSA) has been the focus of action by the government of the State of Amapá in recent years. This program includes support of extraction activities that include funding for the gathering of the Brazil nut through cooperatives as well as the production of the açai or cabbage palm fruit. It encourages non-commercial fishing and finances the

purchase of boats and fishing equipment. The State, split in the middle by the Equator, has been attracting European businessmen and tourists through neighboring French Guyana. The PDSA is also encouraging the agricultural-forestry systems in an attempt to recover degraded areas, product diversification and environmental equilibrium. The agricultural industry includes the processing of Brazil nuts and cocoa, the industrial manufacturing of cassava flour, and the processing of fruit pulp.

In the same way as Amapá, the State of Roraima is strategically located in regards to the Caribbean and American markets. Its geographic isolation from the rest of Brazil ended with the construction of the BR-174 highway which links Manaus to the frontier with Venezuela and passes through Roraima and ends in Caracas. This allows for products to reach the markets of the Andean and Caribbean countries as well as those of Panama and the United States. The lack of electricity was overcome by importing energy from the Guri hydroelectric plant in Venezuela that enabled the State to gear up for industrial, agro-industrial and ecotourism projects. Today, this import of energy means that Roraima can offer a surplus of 120 MW to private enterprise.

Another state that is making an effort in the search for sustainable development is Acre. This State has been implementing a project created by environmentalist Chico Mendes called the Florestânia that is devoted to structuring the local economy on based on forest products. For Acre, FGV identified the following as potential core

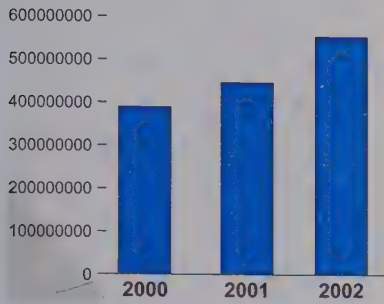
Production of soy bean in the North

Year	Production (tons)	Evolution compared to 1990 (%)	Planted Area (hs.)	Evolution compared to 1990 (%)
1990	44.392	0	34.760	-
1991	10.842	(75,58)	5.440	(84,35)
1992	21.107	(52,45)	11.180	(67,84)
1993	37.358	(15,85)	21.085	(39,34)
1994	68.637	54,62	35.750	2,85
1995	47.271	6,49	24.737	(28,83)
1996	15.192	(65,78)	7.644	(78,01)
1997	47.977	8,08	35.742	2,83
1998	142.409	220,80	67.779	94,99
1999	133.853	201,53	57.153	64,42
2000	184.614	315,87	73.004	110,02

Source: IBGE

Exports from the Manaus Industrial Nucleus (January to July)

(Amounts in US\$ 1.00)



Months	2000	2001	2002
January	37.465.881	55.827.891	48.306.649
February	55.223.348	60.413.887	74.443.525
March	48.393.959	58.432.493	95.704.908
April	58.993.807	75.688.147	90.977.112
May	48.830.871	65.187.629	76.656.371
June	73.750.141	67.003.253	77.176.770
July	69.983.264	82.126.914	105.133.174
TOTALS	392.641.271	464.680.214	568.398.509
Yearly growth (%)	-	18,35%	22,32%

Source: Suframa

products: heart of palm, pupunha (*Guilielma speciosa*), cassava starch, tropical fruits (especially cabbage-palm fruit and the fruit of a tree from the cocoa family called cupuaçu), sawn and planed lumber, fish breeding, Brazil nuts and goods derived from rubber.

Acquiring access to the Pacific markets was an obstacle that has now been overcome by the Western Amazon. The international road link, which stretches for some 2.1 thousand kilometers, starts in Porto Velho, in Rondônia, traverses the cities of Rio Branco, Brasília and Assis Brasil, in Acre, and carries on through the Peruvian cities of Iñapari, Puerto Maldonado, Juliaca, Puno, Moquegua and Ilo. Roads such as the BR-364 and BR-317 are of strategic importance in the commercial integration with the Andean countries and provide Brazil with access to the ports of the Pacific.

The diversification of the grain sector was one of the strategic activities that grew over recent years in Rondônia and soybean came to the forefront of the State's promising export opportunities. Currently, coffee is also one of its main sources of revenue and the 2001 harvest weighed in at 2.5 million sacks. With a herd of 6.5 million head of cattle, breeding in Rondônia is second in the ranking of the Northern Region.

With annual revenues averaging more than \$10 billion provided by some 400 companies that settled there and count with high levels of technological innovation, competitiveness, and productivity, the industrial nucleus of Manaus was consolidated by the creation of the Manaus Tax-Free Zone (ZFM). This occurred in the second half of the sixties and was part of a policy

addressed to transferring a portion of the Brazilian economy to the interior. It resulted in concentrating the wealth of the State in its capital, Manaus, and this can be seen by the fact that approximately 95 cents of each real collected in the State comes from the industries that set up business in the ZFM. Although there is a negative side to this concentration, the ZFM contributed by conserving some 98 % of the State's native forest apart from generating 50 thousand direct and 250 thousand indirect jobs in Manaus. Another 20 thousand jobs were created in the other states of the Western Amazon and 250 thousand in the rest of the country through commerce, marketing, and client services.

The preservation of its forest is now encouraging the Amazonas government to seek alternatives for developing its natural resources with activities such as ecological tourism, the sustainable exploitation of the lumber potential and the economical use of its biodiversity, without mentioning the exploitation of its huge natural gas reserve. If, in the first decade of its existence, the ZFM was mostly concerned with the sale of imported high technology products to the rest of the domestic market, resulting in large numbers of consumers from other states visiting Manaus - a fact that encouraged the expansion of the trade and service sectors - the consolidation of industry took place in the eighties and nineties. There are several competitive advantages for these companies such as an adequate infrastructure to install industrial plants, attractive competitive advantages, qualified labor and a strategic geographical location to conquer foreign markets. And today, with natural gas, the State also offers an

Revenues of the Manaus industrial complex

(US\$ 1,00)

Year	Regional	National	Overseas	Total
1996	2.515.768.449	10.644.982.185	105.308.743	13.266.059.377
1997	2.016.074.170	9.564.949.925	149.656.268	11.730.680.363
1998	1.597.253.188	8.113.751.513	227.586.291	9.938.590.992
1999	1.111.196.001	5.729.923.569	375.653.159	7.216.772.729
2000	1.800.889.236	7.850.092.065	741.625.579	10.392.606.880
2001	1.637.854.088	6.592.086.635	827.285.525	9.057.226.248
2002*	1.060.033.640	3.611.226.709	568.398.509	5.239.658.858

*To july (parcials dates)

Source: Suframa

energy matrix that is a very attractive factor as far as industry is concerned.

As from 1991, and with the economical globalization, the industries in the ZFM started to invest in quality and productivity to create the necessary conditions for competing with foreign products. This resulted in Manaus having, today, a consolidated industrial nucleus and proof of this can be found in the almost certain postponement of the 2013 deadline that was part of the law that established the tax free zone prerogatives. President Fernando Henrique Cardoso himself, when visiting Manaus, in September of 2002, said that the ZFM had come to stay and, at the same time, he requested that the local industrialists double their efforts to increase exports in order to achieve equilibrium in the State's trade balance. In the past five years, the industrial nucleus of Manaus has been gradually increasing its exports. They have increased from \$193.5 million in 1997, to \$419.5 million in 1999, to \$772.7 million in 2000 and to \$850 million in 2001. Estimates are that these numbers will reach \$1 billion in 2002. This is still an amount that is well below the imports of inputs by the ZFM, which are of some \$2.5 billion. However industrialists think they can even the score in three years time.

As a part of these efforts to substitute imports, the Superintendência da Zona Franca de Manaus (Suframa) plans to implement, in 2003, a technology center that will look into the improvement and innovation of electric-electronics and information technology products, as well as the motorcycles manufactured in Manaus. As one of its goals this center will, concentrate on the development of microchips to guarantee a basis for innovations in

technology that could make ZFM products more competitive in international market. The project should receive \$300 million in investments over the next six years

Suframa hired the services of Fundação Centros em Tecnologias Inovadoras (the Foundation of Innovative Technology Centers) - Certi -, headquartered in Santa Catarina, to identify the bottlenecks of the exports of the Manaus industrial nucleus and to present solutions. The idea is for the Center to fulfill the demands for the technological innovation of the products on the list of potential exports at the speed required by the globalized market. Also, a campaign was created to attract suppliers of inputs to set up business in Manaus as today local industries are importing some \$2.5 billion a year in inputs. Other sectors should also benefit from the development of technology for the three current strategic segments of the ZFM which are biotechnology, petroleum and natural gas. This center will collaborate with the Centro de Biotecnologia da Amazônia (Amazon Biotechnology Center) - CBA - inaugurated in September 2002, and the future petrochemical industry of the petroleum basin of Urucu located in the province of Coari. According to specialists, the tendency is that Manaus will become more and more attractive to manufacturers of semiconductors and other types of inputs. In ten years time Brazil should be consuming some \$10 billion in semiconductors, as opposed to the current \$2 billion. Brazilian industry supplies 5% of current demand. Almost all the electronics and information technology industries are headquartered in Manaus.

One alternative to encourage the creation of other

nuclei in the ZFM, where some 70% of current revenues come from the electro-electronic, information technology and motorcycle industries, would be a science and technology base that could lead to a bio-industry cluster equipped to explore the pharmaceutical, herbal, extraction, and cosmetic potential of the region. By using biodiversity as raw material this cluster could contribute to diversifying state income and job opportunities. An important step in this direction was the launching of the CBA, located in the industrial district of Manaus, to generate technologies that add value to the raw materials and biodiversity of the Amazon. One of the first CBA actions was to sign a technical cooperation term with Associação Brasileira de Indústria de Higiene Pessoal, Perfumes e Cosméticos (Brazilian Association of the Personal Hygiene, Perfume and Cosmetic Industries) - Abihpc - for the creation of a project for co-participation. The Ministries of Development, Science and Technology and the Environment are sponsoring this project.

The building that houses the CBA cost R\$12 million and another R\$20 million will be invested in the installation of its laboratories. The CBA management includes the participation of government, education and research institutions

and private companies. Suframa entered into partnerships with regional education and research institutions to educate specialists in biotechnology and other areas required for the full operation of the CBA. The CBA has contributed in the transition of the exploitation of Amazon biodiversity from what could only be considered as handicraft, to its present industrial phase. It is estimated that 400 products sold in Brazil have oils and extracts originating from this rich biodiversity in their ingredients. At least 7% of consumers worldwide prefer to use natural products, a percentage that reaches 15% in Germany. The world market in this sector turns over \$195 billion/year whilst Brazilian exports amount to a mere \$147 million. Local revenues from this segment came to \$8.6 billion in 2001. The Instituto Nacional de Pesquisas da Amazônia (National Institute for Research in the Amazon) - INPA - is also trying to contribute in this search for alternatives through the creation of a business center to make the technologies that it has developed over the past 47 years available to companies and the population. The results of research by INPA show means and ways for using the region's natural resources with the smallest environmental impact possible. The



The Amazonas Theater, a living monument to the rubber era, built in Manaus at the beginning of the 20th century.

laboratories at INPA host a collection of 10,239 wood samples, 11,151 amphibians and reptiles, 165 thousand invertebrate animals (pinned) and 4 million conserved in alcohol, 4 thousand mammals, 17 thousand fish, 2,200 fungi of medical interest, 1,500 leishmaniosis stubs, 850 micro bacteria and a germ-plasma bank that grows everyday. According to its directors, INPA is well equipped to supply technology in areas such as ecosystems, foodstuff production, forest resource manipulation, medicinal plants and assistance in the control of endemic diseases.

Energy features as one of the main attractions for investments in the Amazon, especially in the industrial nucleus of Manaus. There are great expectations in relation to natural gas, which will, in the next few years, become an integral part of the State's energy matrix. The ZFM will gain more competitiveness with the use of gas. Calculations by the Federação das Indústrias do Amazonas (Federation of Industries of the Amazon) - Fieam - reveal that the use of gas should provide savings of 20% to 30% in the final cost of products and that industries could reduce their energy expenses by up to 70%.

The Amazon has gas reserves of 130 billion cubic meters. Just the Petroleum Province of Urucu, located 370 kilometers from Manaus in the municipality of Coari, holds 60 billion cubic meters, which represent almost a half of this charted volume. Other important reserves can be found in Jurua, with 30 billion and Silves, with 8 billion cubic meters. This gas should generate 300 megawatts (MW) of energy based on a daily consumption of 3.9 million cubic meters. Manaus alone would consume 2.5 million cubic meters of this gas per day.

After complicated discussions on the means for transporting the gas to the consumer centers, the government of Amazonas announced, last September, that it had abandoned the idea of using barges. Petrobras, the concessionaire of the Urucu gas fields will transport the fuel to Manaus through a gas pipeline that will cost \$300 million to build. Another gas pipeline will be built to take gas from Urucu to Porto Velho and this one will cost \$250 million. State government technicians were in favor of transporting the gas by barges.

The investments that are being made in logistics

and infrastructure should contribute to the goal of zeroing the deficit of the Amazon trade balance in the space of three years. A new freight port that will probably be inaugurated in Manaus, in 2005, is considered as the main project in this area. Another important investment is being made in the construction works of the freight terminal (Teca III) at the International Airport Eduardo Gomes, in Manaus, with some R\$40 million in investments by Infraero. The new freight terminal will have an area of 13 thousand cubic meters and will be able to service the demands for cargo until 2010.

The State of Pará has the same concerns. A blueprint for four bridges (the longest being almost two kilometers) and 74 kilometers of road is part of the federal program Avança Brasil in partnership with the government of Pará. This system, known as Alça Viária, (Ring-road), was inaugurated in September of 2002 at the cost of R\$246 million and will consolidate the municipality of Barcarena as a metropolitan in-

Amount of Investments in the North

(up to 2007)

Sector	US\$ mil
Electrical energy	11.216,50
Utilities	2.458,16
Mining	2.147,10
Metals	1.761,20
Transport and warehousing	1.755,70
Petroleum and gas	1.566,43
Electronics	1.389,40
Services	1.215,10
Food	945,80
I.T. and telecoms.	838,60
Wood/furniture/paper	471,30
Plastics and Rubber	177,40
Autoparts and transport material	160,10
Beverage and tobacco	139,80
Pharmaceuticals/hygiene	129,80
Mechanics	123,80
Textiles and leather	119,80
Chemicals and Petrochemicals	112,60
Construction	111,80
Communication	48,60
Vehicles and parts distributors	25,80
Retail	17,80
Non-metals	15,50
Financial	10,20
TOTAL	26.958,29

Source: DataInvest - G. M. Information Center

dustrial cluster. Located only 40 kilometers from Belém, Barcarena is now linked to the metropolitan region of the capital of Pará and to the South and Southeast of the State.

Economist Paulo Machado, from Rio Grande do Sul, has been in Pará for fourteen years. Specialized in development planning by the Federal University of Pará, and currently State Finance Secretary, Machado does not hesitate to affirm that, if the current trend to consolidate the port of Vila do Conde, in Barcarena, as a platform for the export of mineral products and cargo in general is maintained, the aluminum and calcium complex found in that municipality should benefit from a verticalization process especially if the nearby presence of cheap gas and petroleum is confirmed at the mouth of the Amazon river.

Life in the small town of Barcarena started to change in 1985, when operations started up in an aluminum plant owned by Albras - Alumínio Brasileiro S/A, an association between Companhia Vale do Rio Doce and Nipon Amazon Aluminiun Company (NAAC), a consortium of Japanese companies and entities. Its initial capacity was 160 thousand tons per year of aluminum slabs. In 1991 it reached its second phase with the expansion of its capacity to 320 thousand tons a year, with investments totaling \$1.5 billion.

After an increase to 406 thousand tons in 2001, at the cost of \$55 million, Albras attained revenues of \$454.4 million. It is Latin America's largest steel aluminum company and one of the world's largest. This income could have been higher. Albras went through tough times in 2001. The energy rationing that affected the whole Country in the second half of the year forced the company to turn off 240 of its 960 furnaces and prevented it from starting the operation of the 64 furnaces resulting from the expansion program. For this reason, Albras produced 9% less primary aluminum compared to the year 2000, and invoiced 19.06% less. With the reduction in the risks of a repeat of rationing the Vale Company is putting its finances in order and recuperating the aluminum chain that it had built in Pará. Apart from Albras this complex also comprises the bauxite reserves of Mineração Rio do Norte in the Trombetas River, and its aluminum plant also headquartered in Barcarena. The

company invested \$11 million to increase the amperage of the energy supply lines to the furnace and in the main substation in order to reach maximum performance. It also benefited from the inauguration of the second energy transmission line between the Tucuruí hydroelectric plant and Eletronorte's substation in Barcarena.

The Schahin-Alusa consortium, at a cost of R\$150 million, installed the line. It will put an end to the ongoing energy outages that were causing so many losses not only to the aluminum complex of Vale but also to the whole metropolitan region of Belém and the northeast of Pará. In 1991, Albras incurred losses of some \$60 million due to a 12-hour blackout caused by the interruption in the supply of energy from the only transmission line that existed at that time. With the second line in place Barcarena should attract new businesses. One of them was announced in August of 2002 by the government of Pará. It is a \$700 million investment by Usina Siderúrgica do Pará (Steel Plant of Pará) - Usipar -, controlled by the Costa Monteiro Group, that intends to set up, amongst other businesses, a plant that will produce two million tons of cast iron a year and another plant for one million tons of steel a year.

The plants will be built in an area provided by the State government in the industrial complex of Barcarena. It should start operations in 2005 and will be fully operational in five years. The plans are to use the Araguaia-Tocantins waterway after the conclusion of the works on the locks of the Tucuruí hydroelectric plant and transport the iron ore produced by Vale in Carajás. It will be the first cast iron plant of the Northern region to be implemented outside the Carajás railway axis where there are currently 12 cast iron plants. Another cast iron plant should be set up on that same axis by Vale do Rio Doce itself. This calls for investments of \$400 million in partnership with the North-American company Nucor and will result in a production of 520 thousand tons of cast iron.

At Usipar, apart from the cast iron and steel plants, there will also be a logistics and port service unit, a unit for the production of sheet-board and fertilizers, and a center for the production of thermal insulated and pre-painted aluminum for use in civil construction and in the assembly of mechanic me-

tal structures. Twenty one hundred direct jobs should be created from this venture.

Usipar is a step ahead in the verticalization of the mineral production in Pará that started in Barcarena with the implementation of Albras. The aluminum produced by this company is deemed to be one of the best in the world, almost 100% pure. Almost its total production is exported, mostly to Asia, followed by Europe and the United States. Apart from the quality of the steel produced by Albras, the company also has low costs, one of the world's lowest in this sector. Subsequent to the problems it faced in 2001 with the rationing of electrical energy, the company had nothing but good news. After being granted three international certificates - ISO 9001 (Quality), ISO 14001 (Environment) and OHSAS 18001 (Health and Safety) - it also won the Social Responsibility AS 8000, which complies with Brazilian legislation and the standards of the International Labor Organization (ILO). Albras became the first Brazilian company to be granted the top four international certificates for management systems as a result of investments in excess of \$18 million in social projects.

Standing out among several activities developed in this area is the organic compost and waste-recycling unit of Vila dos Cabanos, a town located near to the plant. The plant started its operations in 1999 by replacing the old open area of a waste dump

and employing 30 people that worked there before as waste collectors. All the waste from the municipality is recycled at the plant, including plastics, paper, cans and soft drink bottles. The organic waste is transformed into fertilizer for vegetable gardens and other community crops. The recyclable material and the scraps from the industrial process are transformed into toys, brooms, bags and sandals.

Another one of Albras' concerns regards the environment. Proof of this are investments made by the company of around \$300 million in preservation programs. For example, Albras is carrying out a pioneer project with the use of a weed and brushwood shredder that eliminates the need for clearance of the ground by fire. The fires used in homestead agriculture are responsible for a good part of the fires recorded by satellite images in the Amazon apart from causing damages to the soil such as loss of nutrients. The use of this equipment that is attached to a tractor avoids losses and conserves organic matter. The so-called Tipitamba project is receiving support from Germany and is being tested by Albras, in conjunction with the community of Barcarena, and in partnership with Embrapa Eastern Amazon and the local town hall. To complete its positive year, Albras had one of its processes to improve the packaging and withdrawal of products from the anode furnaces chosen to represent the Northern region at the Finep Award for Science and



At the port of Trombetas (PA), boats and the ship of the "Amazon Surveillance System" (Sivam Project).

Reserves and production of minerals in the State of Para

Amounts in tons except when expressed otherwise

Mineral	Reserves		Production	
	Para	Brazil	Para	Brazil
Aluminum	1.681.787.820	1.784.300.913	15.388.288	17.925.421
Iron	1.170.867.835	11.275.749.918	55.946.723	172.262.008
Copper	618.108.992	996.977.280		36.813
Limestone	596.847.701	45.459.758.215	132.542	80.657.204
Kaolin	248.790.421	2.467.965.937	1.696.628	3.740.815
Gypsum	189.619.891	888.639.513		1.497.790
Refractable Bauxite	116.696.065	254.718.309	554.659	1.460.264
Quartz	48.033.946	99.276.142	111.227	303.629
Nickel	43.560.000	296.862.120		59.242
Manganese	42.049.785	72.681.092	1.984.415	1.114.711
Shale	36.576.600	7.060.745.287	1.695.000	102.999.703
Clay	33.012.772	1.805.010.836	460.653	45.825.220
Granite	30.736.636	3.283.337.500		45.565
Tin	26.968.212	174.426.557		12.080.945
Sand and Gravel	19.748.395	703.158.225	2.457.750	155.288.897
Gold	18.011.786	1.478.532.174	3.537.160	32.809.657
Potassium	13.257.425	444.031.442		58.955
Zinc	1.297.727	34.926.663		1.309.353
Tungsten	1.121.262	1.284.588		
Quartzite	895.967	706.551.586		1.489.887
Sand (Industrial)	626.960	1.608.064.764	67.361	4.170.511
Flint	177.851	126.229.815		762.732
Industrial Quartzite	73.951	808.124.791		188.597

Source: Ministry of Mines and Energy

Technology granted by the development agency of the Ministry of Science and Technology.

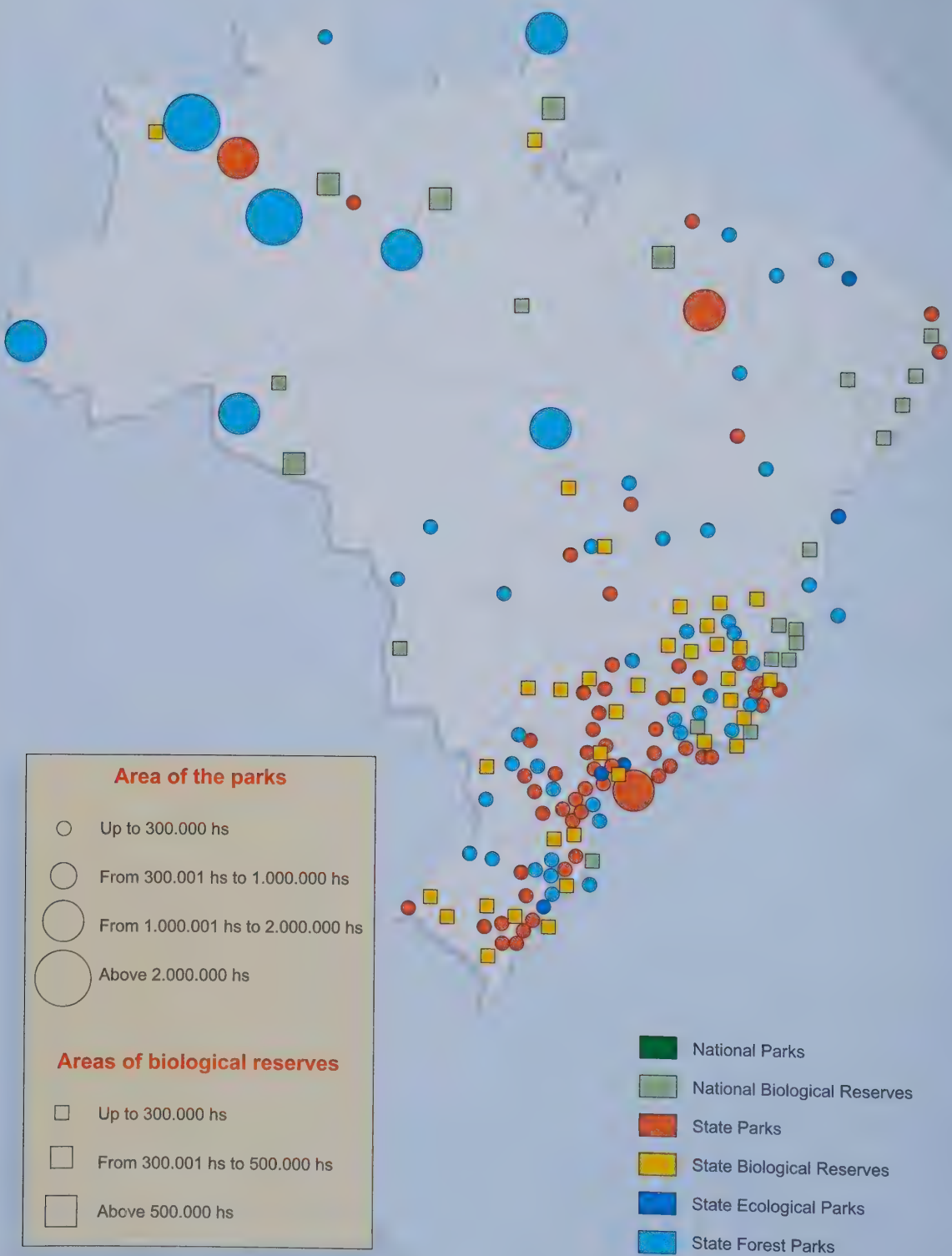
To initiate its aluminum chain in Para, Vale receives bauxite extracted by Mineração Rio do Norte (MRN) in the Trombetas River, in the municipality of Oriximiná by way of the port of Vila do Conde. The mining activities of MRN started in April of 1979, with the first shipment of bauxite to Canada. Its initial production capacity was 3.5 million tons a year. The company has grown over the years and in 2002 MRN is already consolidated as the world's largest bauxite mining company with an annual production of 16 million tons. And the only reason this production will not grow any further is that the boat traffic in the Trombetas River has reached its maximum limit. For this reason, Vale is already thinking of starting mining operations in another Para bauxite reserve located in the municipality of Paragominas, in the Northeast of the State.

MRN is investing \$224 million to expand its production in Trombetas. The company has invested over \$1 billion in the infrastructure of the Trombe-

tas Port where its unit is located. Its 2001 revenues were 26% higher than those of the previous year reaching R\$551 million. The cycle was closed in 1995, when Alumina do Norte do Brasil (Alunorte) started up its operation in Barcarena after a work paralyzation of several years due to strategic reasons on the part of the company. A timely investment amounting to a little over \$800 million guaranteed the refinery the use of state-of-the-art technology in the process to benefit bauxite to make aluminum. Its nominal production capacity of 1.1 million tons was reached when the company completed its second year of operations and this led Alunorte to expand its plant to 1.6 million in 2000.

Now, in 2002, Alunorte is investing a further \$300 million to expand its production capacity to 2.35 million tons. Even before this expansion around 60% of the aluminum from Barcarena was supplying the Brazilian market the main client being its neighbor Albras. When the new stage is operational 60% of production will start to be shipped abroad. Like its neighboring company Alunorte has also been accumulating awards for its production system.

FORESTRY RESERVES.....



Source: IBGE, Directorate for Geoscience, System for Informaton of Natural Resources and the Environment

The washing of the red mud that results from the processing of bauxite is cheaper and more efficient than the conventional one used by a great part of aluminum refining businesses in the world, with four to eight times less concentration of caustic soda. This allows for using the residuals as raw material for manufacturing bricks and tiles. This granted Alunorte the CNI Ecology Award from the National Confederation of Industries in 1999.

Apart from the Aluminum complex, Barcarena is also home to an important kaolin complex composed of Pará Pigmentos and Imerys Rio Capim Caulim. Pará Pigmentos is an association of Vale do Rio Doce with Mitsubishi Corporation and the International Finance Corporation - World Bank. It started operations in 1996 with an installed capacity of 240 thousand tons per year. In 2002 this capacity had already increased to 600 thousand tons with a projection to reach up to one million tons in the future. The raw material is extracted from a mine located in the municipality of Ipixuna, in the Southeast of the State, and is transported through a 180-kilometer long mineral pipeline to the processing unit installed in Barcarena from where it is shipped abroad through a port owned by the company.

Investments in Pará Pigmentos amounted to \$170 million, a sum that will significantly increase in 2003 for the execution of the third stage of the plant's expansion. The company is the only kaolin producer possessing an ISO 14000 certificate for environmental management. Since 1996, Imerys Rio Capim Caulim belongs to the French business group Imerys and is located near to Barcarena. It started with a production of 250 thousand tons of kaolin per year that, after expansion, has grown to 600 thousand tons. Imery's recently invested \$20 million in the construction of a 158-kilometer mineral pipeline that connects its mine, also in Ipixuna, to Barcarena. The mineral pipeline was advantageous in replacing the transport previously carried out by river barges. By the beginning of 2002, the French group had invested \$257 million in the mine, the improvement of its facilities, the port terminal and infrastructure.

Little by little the port of Barcarena is attracting new companies. Apart from the two future plants of Usipar, Alumínio de Barcarena (Alubar),

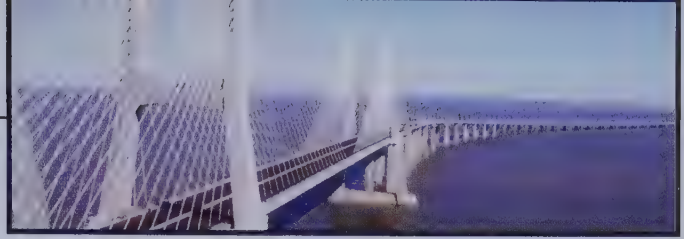
belonging to the Argentine group Soinco, is also installed there after investing \$60 million in a unit for the manufacturing of aluminum cables and bars. The fertilizer giant Bunge, through its Ouro Verde division, has also set up business in Barcarena and is producing 50 thousand tons of fertilizers a year, an amount that should shortly climb to 90 thousand.

The future of the industrial complex of Barcarena is linked to the port of Vila do Conde that is going through an expansion and modernization process. The port's working capacity is almost totally taken up by the shipping and unloading of the aluminum chain. It will, however, have a terminal for bulk liquids with a capacity for 75 thousand-ton ships, in addition to two berths to accommodate container traffic. By March 2003 the expansion work should be concluded and the port will grow from its present 6.5 million tons per year loading ships of up to 80 thousand tons to 9.5 million tons per year loading 100 thousand-ton ships. Inaugurated in 1985, at the same time as the Albras plant, the port of Vila do Conde will gradually replace the operations of the obsolete port of Belém.

The improvements in the operations of the port of Vila do Conde are also associated to the conclusion of the road and bridge system of the Transport Ring - road. The agricultural production of the South and Southeast regions of Pará will be shipped out through this port together with a good part of the grains from the Midwest region thereby taking advantage of the proximity to the Antilles, the United States and Europe. Thus, the port structure of Pará will be competing with ports such as Itaquí, in Maranhão, and Santos, in São Paulo.

Apart from everything written in these pages, it should go on record that the Amazon is so huge and breathtaking that a complete description would not fit in several tomes the size of the Oxford Dictionary. The truth is that this area of South America and its Brazilian portion should be included amongst the most precious assets of mankind. It is here that Brazil's policies and comprehension of the needs for sustainable development is vital for the whole of planet Earth and these efforts are worthy of recognition.





The Brazilian Multinationals

Civil engineer and businessman Emilio Odebrecht could not hide his indignation. Brazil's largest company, Petrobras, had taken an important step in its long and successful career when it bought the second largest Argentine petroleum and oil company, Companc Energia (Pecom), for \$1.18 billion in July 2002. It was an operation that demanded talent and a strong sense of opportunity. Odebrecht was excited with the transaction. After a difficult year this was something to be celebrated by everyone.

"The Petrobras acquisition of Perez Companc was treated by the press as just another everyday fact in the pages of our newspapers. The issue was quickly forgotten like many successes Brazil has been accumulating over the past years that end up buried by an avalanche of bad news. Thus, few people were aware that with the purchase of the Argentine company, and consequently of its oil and gas fields, Brazil, through Petrobras, had taken an important step towards self-sufficiency in petroleum and in the integration of energy in South America, as well as towards a privileged situation in the international market, which is going through a moment of uncertainties" wrote Odebrecht. The businessman was therefore outraged by the lukewarm

treatment given to this transaction, which should have boosted the self-esteem of Brazilians that has been on the down side since the beginning of this millennium.

Emilio Odebrecht knew what he was talking about. With 22 years of international experience the group of companies that he directs, especially Construtora Norberto Odebrecht, founded by his father in 1945, he has learned that gaining world market share and building a reputation outside the country's frontiers was impossible without technical knowledge, professionalism and a lot of courage. Odebrecht learned that competing outside national frontiers often requires the patience of starting with a small business and not necessarily the most profitable one. It was like this in the United States, for example, where Norberto Odebrecht arrived in 1991. He took on his competitors and beat them in the bid to build Miami's overhead city train line, a project worth only \$28 million with low profit margins and tight delivery deadlines. Today, he has an enviable portfolio in the most disputed market in the world and is carrying out far more valuable projects, like the expansion of Miami's airport budgeted at \$665 million and that of

Miami's cultural and artistic center, projects worth \$225 million.

Even though it was a modest way to start in the United States this did not happen without hard groundwork. When it disembarked the Odebrecht company already had 11 years of experience and know-how outside Brazil. And since it accepted the challenge of building the Hydroelectric Plant Charcani V, in Peru, in 1980, Odebrecht had to prove, with every meter of soil that it removed, that the Brazilian company was capable of facing and overcoming difficulties and could be competitive anywhere on the planet.

Today, the engineering company Norberto Odebrecht has subsidiaries in nine European, African and American countries. In Latin America, apart from Peru, the company operates in Argentina, Chile, Ecuador and Colombia. In Europe it purchased the Portuguese construction company Bento Pedroso in 1988. It has already carried out many projects in Portugal, some of them famous for their beauty and the quality of their execution, like the Vasco da Gama Bridge over the river Tagus, a project that wrote the Odebrecht name into the history books of



The Vasco da Gama Bridge, over the river Tagus, built by Odebrecht.

Lisbon. In England, where it acquired the contractor SLP, Odebrecht operates in oil prospecting in the North Sea

In 1984, before competing in the European market, Construtora Norberto Odebrecht built the Capanda Hydroelectric plant in Angola. Today, Odebrecht is also entering that country's history with the construction of a 42-kilometer canal as part of a large irrigation project. This will have a positive effect in Angola in the near future as it will recover an agricultural area destroyed by the civil war. It is because of stories like these that Brazil's largest construction company, with annual revenues of R\$8.5 billion, is already recouping half of its income from overseas projects and is consolidating its position as a Brazilian multinational.

Therefore it was natural that with all this experience, the enthusiasm of the main executive of the Odebrecht group regarding the Petrobras deal closed with Argentina in July 2002 ought to be somewhat greater than that of the average Brazilian citizen. Nevertheless, people who are better informed and reflect a little more about what happened can sympathise with engineer Emilio. To start with Argentina, a country devastated by the worst economic crisis in its history and the dramatic end of the parity of its currency with the American dollar, has been in a state of turmoil, high unemployment and uncertainty throughout 2002.

It was in this context of booming indices regarding the Argentine risk and the desperate flight of capital from countries with economies much stronger than that of Brazil, such as the United States, France and Canada, that Petrobras realized that the time had come. "Argentine assets that have always been expensive are cheap right now. It would have been unthinkable to purchase the control of a company of the size and quality of Perez Companc before the devaluation of the peso", businessman Eloi de Almeida, President of Grupo Brasil, an entity that incorporates one hundred Brazilian companies operating in Argentina, declared at the time.

The incursion had its risks but it would undoubtedly bring valuable strategic rewards. Experienced in overcoming crisis, the Brazilian

Countries where Petrobras has operations

D. DEFANTI

Country	Start	E&P	RT&C	Distr	G&E
Columbia	1972	S	S		
Angola	1979	S	S		
USA	1987	S	S		
Argentina	1993	S	S	S	S
Bolivia	1996	S	S	S	S
Nigeria	1998	S			

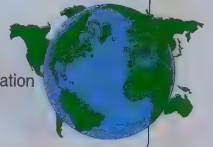
Abbreviations

E&P = Exploration and Production of Petroleum and Gas

RT&C = Refining, Transport and Commercialization

Distr = Distribution

G&E = Gas and Energy



businessmen knew that, in times like these, there is no room for panic. "It's time to achieve supremacy in the South Cone, preventing foreign competition from taking up strategic positions", insisted Eloi de Almeida. It was at that moment and in this environment that Petrobras closed the deal that would consolidate its position as a Brazilian multinational in South America.

However, it is worth remembering that, although it was a deal of great impact the purchase of Perez Companc was not an isolated event. In fact, it was only the beginning of a strategic plan conceived and executed with surgical precision. Seven months previously, Petrobras had taken its first truly important step in establishing itself in a position where it not only participated but also competed in the Argentine fuel market. The Brazilian company established a toe-hold in the distribution market of petroleum derivatives in that country when it closed a deal to exchange assets of \$500 million with Repsol-YPF. Petrobras took control of 700 service stations, accounting for no less than 11% of total fuel distribution in Argentina, as well as a refinery in Bahia Blanca and the rights for drilling in the Neuquén Basin. A few months later, when many companies from other countries were packing their bags Petrobras announced it had not gone to Argentina for a picnic. In May it announced and started to execute a three-year program of investments that would cost \$146 million, \$40 million of



The sports, culture and leisure complex in central Miami, in Florida, one of Odebrecht's large construction works in the USA.

which was for immediate use in the refurbishing and modernization of the recently purchased network of service stations, in the prospecting of new reserves in the Neuquina Basin and in improvements in the Bahia Blanca refinery. In June, the following month, Petrobras amazed everyone once again when it announced the \$89.5-million acquisition of Petrolera Santa Fe, a company that belonged to the U.S. corporation Devon Energy, one of the companies fleeing the crisis in Argentina. Apart from producing 6,000 barrels of petroleum and 642 thousand cubic meters of gas per day, the assets of Santa Fe included 4 oil and gas fields in full production and one still to be drilled, totaling confirmed reserves of about 84.7 million barrels of oil.

But this spectacular leap forward in opportunities offered by Argentina was not for beginners. Just like the Emilio Odebrecht group, Petrobras has been developing and using its technical abilities, excellent management and strategic vision to fly its flag outside Brazil for a number of years. Since 1972, when Braspetro was created specifically to operate overseas, Petrobras' businesses have been expanding. They

can already be found in 32 countries and range from upstream segments, that is, exploration and production, to downstream activities, including refinery, commercialization, transport, logistics and marketing.

In Braspetro's first years, apart from projects carried out in Colombia and North Africa, the company became famous worldwide for its discoveries in the middle of the Iraqi desert, especially in the Manjoon and Nahr-Umr fields with reserves estimated at 10 billion barrels. Braspetro carries out exploration activities in the North Sea, in Norwegian and British waters, and also in the Gulf of Mexico in areas within the jurisdiction of the United States.

Petrobras' successful experience as a Brazilian multinational has led the company to restructure its international business area in nine Braspetro subsidiaries. They are either independent companies or affiliated to large global petroleum companies. They have headquarters in many different regions of the globe depending on the strategic and operational interests of the businesses. They are located in Angola, Argentina, Bolivia,

Colombia, Kazakhstan, United States, Equatorial Guinea, Nigeria, and Trinidad and Tobago.

Therefore, even before the acquisition of Perez Companc and Santa Fé in Argentina the production of oil and natural gas by Petrobras in its exploitation units located outside the country were already significant. In 2001, this production averaged 68,400 barrels per day of equivalent oil (sum of oil and gas converted into oil barrels) with an accumulated increase of 25.7% in the last four years. The largest production of equivalent oil is obtained in Colombia with a daily average of 18,000 barrels, followed by Angola, which does not have gas, with a daily average of 17,500 barrels a day. After the recent acquisitions Argentina should make a great leap up this ranking. Currently, holding an average production of 934,000 cubic meters a day, the country is already an important player amongst Petrobras' overseas producers of natural gas occupying third place after Bolivia and the United States.

The determination to forge its own destiny and an absolute lack of complacency about what has already been achieved have been the hallmark of Brazilian businessmen who, after venturing beyond the frontiers of Brazil, are not content merely to participate in other markets. They are eager to grow, and are indeed growing, in countries where one fine day our flag was hoisted. There is no doubt that Brazilians

nurture an attitude that invites good will and creates empathy. However the Brazilians of the Gerdau group, leaders in the production of long steel for the civil and mechanical construction industries, are demonstrating to who ever is interested that a successful business is based on the same precepts anywhere in the world.

With discipline and commitment to quality within the company, and transparency and trust outside in its relationships with suppliers and especially with clients, the Gerdau family is always aware that the lessons learned from their predecessors are the core of the success of the group that has become one of the largest world players in the steel industry. With assets in the United States and Canada, Gerdau Amersteel Corporation was recently conceived to take its place amongst the major producers of long steels in North America. The current generation are the descendents of Joao Gerdau and his son Hugo who set up the nail factory Pregos Pontas de Paris in Porto Alegre (RS) 100 years ago. As far as Joao was concerned a packet of 100-dozen nails should always contain 1,200 units, even though he knew that most buyers would never go to the trouble of counting them.

However, Gerdau did not become the giant that bears its name in North America overnight. The feat of becoming a Brazilian steel multinational was achieved in 1980 when the group decided to make its first foreign investment. It crossed the nearest frontier, that of Uruguay, and purchased Laisa, a small plant in Montevideo, which still supplies the local civil construction market with 72 tons of bars and thermal insulated products. After this successful experience, Gerdau became eager to commence its journey towards North America, the world's largest and most disputed market and the dream of every steel producer.

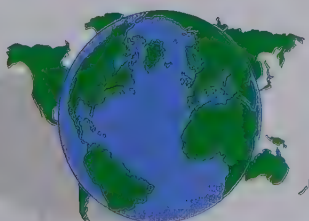
In 1989, Gerdau made its first move to the North, when it purchased Courtice Steel, a plant located in Cambridge, in the province of Ontario, Canada. To start with, Canada was a strategy that proved to be correct in the long term. NAFTA's advances and the recent protectionist measures adopted by the United States and Canada in favor of local steel

Presence of the Gerdau Group

Wordwide

D. DEFANTI

Country	Assets	Company
Canada	2 steel mills	Gerdau Steel
U.S.A.	5 steel mills	Ameristeel
Argentina	stock holder	Sipar Aceros
Chile	1 steel mills	Gerdau Aza
Uruguay	1 steel mills	Gerdau Laisa



Source: IBS

industries conferred certain advantages on those who arrived willing to demonstrate what had achieved in Brazil and would they certainly pay off in the years to come, that is, competitiveness. Gerdau was to make a second acquisition in Canada one year later. In 1995 they aggregated the MRM Steel plant in Manitoba to their international assets and increased their capacity for rolling steel for civil construction in North America to 600,000 tons per year. They were now ready to set foot in the American market. First, however, Gerdau made sure to consolidate its presence in Latin America. In 1992, it took over two steel companies in Chile-Indac and Aza-that were merged into Gerdau Aza. In 1997, it was Argentina's turn, with the incorporation of the Sociedad Industrial Puntana in the province of San Luis. The following year, it acquired 38% of participation in another steel company, Sipar, in Rosario, increasing its production in Argentina to 195,000 tons.

Finally, in 1999, Gerdau was ready for one of the most important transactions on its mission to to step up to the podium of world's major steel producers. The opportunity came from the decline in value of steel assets in the United States, a phenomenon that since 1998 has been forcing the traditional steel giants of that country to file for Chapter 11.

Gerdau had its eyes peeled and acquired Ameristeel for \$322 million, a strategic asset for their plans as the logistics were in tune with the focus. Ameristeel is the second largest producer of bars and the third in thermal insulated rods in the United States, just what Gerdau required. The experience and the muscle were already there so when Gerdau took the spectacular step towards the merger of its assets in the United States and Canada with those of the Canadian company Co-Steel, it created Gerdau Ameristeel, a giant of 6.8 million tons a year, 11 plants, 8 of which are in the United States and annual gross revenues of \$1.7 billion. Gerdau kept with 74% of the capital of the new company consolidating its position in the North-American market and increasing the participation of the overseas

units in its business to 50%, one of the largest amongst the Brazilian multinationals.

But Gerdau is not the only Brazilian steel company to compete abroad. In fact, the Brazilian steel industry is reaping the rewards of 10 years of a complete restructuring, which included the privatization of the giants in rolled steel, an investment of \$11 billion in production units and management modernization. Not only did all of this give Brazilian plants state-of-the-art world-class technology in steel, but also gave its companies a competitiveness that is recognized worldwide. Now that this cycle of renovation is over Brazilian steel companies are not only showing that they are participants but also that they can take advantage of the world's steel consolidation process, a movement that has already started throughout Europe and will become worldwide.

Companhia Siderúrgica Nacional (CSN) is one of the major stars in this scenario. Privatized at the beginning of the 1990's, the largest Brazilian steel producer has received funding of \$3.7 billion most of which, \$2.0 billion, has been invested in updating technology at its original plant in Volta Redonda. As happened with most of the Brazilian steel industries at the time CSN did not invest in the expansion of its raw steel production capacity which remained at 5 million tons. It opted for its rolling capacity and the elaboration of its line of finished products.

A good example is the hot plated line developed in partnership with the German company Thyssen-Krupp Stahl. Ready to attack the world market, CSN focused its attention on the United States and, making use of a good opportunity, the company acquired the assets of a steel company that had filed for Chapter 11, Heartland Steel, of Terre Haute, Indiana for the modest amount of \$50 million. Able to produce plates at a low cost-\$100 per ton-in Volta Redonda, CSN followed a strategy of logistics to: overcome the frequent North-American obstacles for imports of finished plated steel, by producing right there. The basis were Brazilian rolled plates that were cheaper and generally free from overtax due to the fact that they are semi-finished products.

From the Heartland plant, CSN is free to access the American cold plated and galvanized steel market, a valuable source worth no less than 11 million tons per year of high value-added products, a volume superior to the total amount of plated steel consumed in Brazil. The plant purchased by CSN, has the capacity to cold plate 800,000 tons a year with a galvanized production line for 300,000 tons a year. The plant's equipment contains updated technology since it started operations in 2000. CSN's arrival in the United States and its exposure to the American market quickly caught the attention of the giants in the sector. Bethlehem Steel, for example, has already proposed a joint venture in which CSN would be responsible for operating the cold plated range in their Sparrow Point, Maryland, plant. The third largest steel company in the United States, with annual revenues of \$4.0 billion, Bethlehem, like many other steel companies in the United States is facing huge social security-related debts and losses that have led the company to file for Chapter 11. The venture with CSN is seen by the American giant as an opportunity to gain access to the semi-finished products manufactured in Brazil based on cheap and good quality ores that the Brazilian company can extract from its own mine, Casa de Pedra, located in Congonhas, Minas Gerais.

It was, in fact, this comparative advantage of producing steel at low cost and being able to rely on its own iron ore that gave CSN the chance to pursue its most daring achievement in the international market, the merger with Anglo-Dutch giant Corus, the sixth largest in the world with a capacity for 18 million tons. The world's fourth largest steel company will emerge from this merger in which the CSN's participation will represent 37.6% of the stock thereby consolidating, in less than three years, its position as a Brazilian multinational.

The advantages of privatization were not exclusive to CSN. Today, in the United States, the Heartland plant is not the only company to have a Brazilian flag flying at its entrance. Vale do Rio Doce, privatized in 1997, consolidated its position as a world leader in iron ore and pellets

(concentrated ore that is aggregated in the form of pellets used by electric steel companies). Vale sold pulp and paper assets to concentrate on a profile that the company defined for itself: a global company of diversified mining. The word global does not only apply to the destination of its ore. It is also the expression of a clear determination of no longer limiting its business and expertise to the Brazilian market as the company is determined to be equally strong in other types of minerals such as kaolin, copper, bauxite and gold. As to iron ore, Vale seems determined to satisfy its customers, the international steel companies and, at the same time exploit the potential of an industry capable of producing 800 million tons of raw steel a year.

In pursuit of this objective Vale do Rio Doce first set foot overseas as an owner of industrial assets in 1999, just two years after its privatization. CSN started off with the largest steel market in the world, the United States, by acquiring half of the capital of California Steel Company. This is not one of those integrated and already weakened giant American companies. It is one of the three most profitable American mini-mills, together with Nucor and AK Steel, with annual revenues amounting to \$650 million. Apart from producing steel plates and hot and cold rolled steel, California Steel also operates a line of galvanized steel for the civil construction and automotive industries. The acquisition of 50% of that company followed the intelligent strategy of adding value to its iron ore, within its own businesses. Vale shares the control of California with Kawasaki Steel, which is also a partner in the Brazilian Companhia Siderurgica de Tubarão (CST), the world's largest exporter of plated steel, a semi-finished product that goes straight to the steel rollers of the mini-mills. Vale delivers the iron ore to CST on the coast of Espírito Santo, and CST delivers the plates to California Steel.

The year of 1999 had not yet ended when Vale crossed the Atlantic. It went in search of meeting its iron ore clients' needs with another essential material for the production of quality steel: manganese iron alloys. The opportunity

arose when the French company Usinor, currently one of the partners of Acelor, the world's largest conglomerate of steel companies was looking to sell its iron alloy plant located in Dunkirk. That is now called Rio Doce Manganese Europe (RDME), with a capacity for 140 tons of iron alloy and revenues of \$70 million. RDME is one of the most highly rated companies in its sector in Europe, both for the quality of its product and for its high standards of management. One of its most recent awards was granted by the Insead University, in France, one of the world's most distinguished centers in the training of executives.

In October 2000 the internationalization of Vale's assets went even further: this time it was

expansion of a steel industry cluster of mini-mills that consume pellets for direct reduction is taking place. GIIC processes the ore shipped from Brazil and works as a distribution center for Vale in the Middle East with the advantage of adding value.

Subsequent to the Middle East, Latin America became the new target for CVRD. At the end of 2001, the company presented a proposal for the acquisition of a mining company in Chile that the American company Exxon was selling but, in the end, it did not win the bid. However in 2002 it created a joint venture with Cia. Cordilera de Minería, to invest \$6.7 million in the search for copper and gold mines in the South of Peru. Vale has been consolidating its assets as one of the largest

Brazilian multinationals. The overseas businesses have quickly risen to 14% of the company's total revenues: more than R\$ 6.5 billion at the end of 2001. Roberto Castelo Branco, Vale do Rio Doce's director for relations with investors explains that in line with the company's goals for growing and adding value new opportunities will be sought overseas. According to Roberto, CVRD is always studying opportunities to participate in projects or companies abroad, provided they are a good asset, reasonably priced and are within the company's core business. That is the reason why the internationalization of Vale is an ongoing operation.

High quality products together with competitiveness and a well-planned business expansion strategy can mean booming growth for those who went overseas in search of new markets. That is the case of Marcopolo, a manufacturer of bus chassis that after decades of developing its business in Brazil took advantage of a good opportunity, in 1991, to cross the Atlantic and built a manufacturing unit in Portugal. Marcopolo definitely has nothing to regret. Ten years later, at the end of 2001, the company attained revenues in excess of R\$1 billion and its overseas sales had already surpassed those in the Brazilian market,



Front view of Marcopolo's bus manufacturing plant located in Johannesburg, in South Africa.

Bahrain, in the Middle East. There, the company shared an investment of \$183 million with Gulf Investment Corp. for the purchase of a pellet manufacturing plant that used to belong to Kuwait Petroleum. Gulf Investments is an investment bank that captures capital from countries in the Persian Gulf area. Apart from being a partner with 50% of the capital Vale also operates GIIC, as that joint venture is now called. With a capacity for 2 million tons of pellets a year this new overseas business represented an important strategic step for CVRD. In this region where natural gas is abundant and cheap, the

representing 57% of total revenues. Of the 210,000 buses that the company will produce this year, 13,500 will come out of one of the eight Marcopolo plants, five of which are located overseas. This represents 6.4% of world production and was attained in such a small amount of time that Marcopolo is determined to extend its international presence even further. The company has plans to double the current production capacity of its plants and reach at least 10% of the world production of buses of different sizes in five years time.

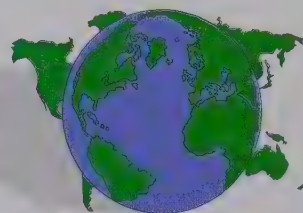
That is no small feat for a company that in 1949 took more than 90 days to produce its first wooden chassis that had to be adapted to the structure of a truck. And for many years it was like that because Brazil did not manufacture bus chassis. Only after 1953 did the first steel bodies appear, a technological leap that placed Marcopolo, then still using its old name of Nicola & Cia, in a leading position in the Brazilian market. The current name was adopted only in 1998, after the huge success of one of its highway models, the "MARCOPOLO", a tribute to the adventurer from Venice. It was launched in the Sao Paulo Automobile Exhibition the same year. Equipped with the most advanced construction techniques and design, the model not only bestowed a new name on the company but also showed the former Nicola & Cia. that in this segment ongoing innovation was very important to the end-user. This would make a crucial difference for the bus manufacturer between surviving or dominating the market.

The first tentative international experiences had started before the "MARCOPOLO", but the company's buses were only sold in Latin America. But these sales helped Marcopolo to acquire the agility that the company would need later when it decided to become one of the world's largest in the sector. Thirty years passed, from 1961 through 1991, of exports of disassembled bodies, first to Uruguay and then to Venezuela, Peru, Chile, Ecuador and Mexico. Today, Marcopolo buses are exported to 70 countries. Marcopolo started to become one of the most successful Brazilian multinationals in

Presence of the Marcopolo Group

Wordwide

Country	Company
Portugal	Marcopolo Indústria de Carroçarias S/A
Argentina	Marcopolo Latinoamérica S/A
Mexico	Polomex S/A de C.V.
South Africa	Marcopolo South Africa PTY Ltd
Colombia	Superpolo S/A



1991 when it opened its first plant overseas, Marcopolo Indústria de Carroçarias S. A., in Coimbra, Portugal. This plant, in addition to competing for market shares in Europe and Africa, plays the strategic role of keeping Marcopolo up to date with the technology and the design of buses produced by large European manufacturers.

Following suit, four other plants were set up abroad, in Colombia, Mexico, Argentina and South Africa. These complemented two new Brazilian units included in Marcopolo's plans to increase its participation in the world bus market. In the space of 10 years, that is, at the end of 2001, the company had already doubled its annual production from 6,000 to 12,000 units a year. After operating a small unit in Aguas Calientes, in Mexico, Marcopolo amplified the strategic relevance of that country in its overseas operations and, with Mercedes-Benz, it set up a new plant, Polomex S. A., in Monterrey. Marcopolo holds 74% of the capital of Polomex. The new plant, with an installed capacity for 4,000 units a year, develops and produces a great variety of models, and services several markets from Mexico. One example is Saudi Arabia, a country for which a special model of the Andare line was developed.

In Colombia, Superpolo S. A., in Santa Fe de Bogota, can produce 2,000 units of city bus bodies, microbuses and intercity buses per year.

Apart from the Colombian market, the plant also supplies Venezuela, Peru, Ecuador and Panama. The Argentine plant is located in the city of Rio Cuarto, in the Province of Cordoba, with a built area of 12,000 square meters. It can produce up to 1,250 city buses and microbuses a year for both the local market and those of Uruguay and Chile. Marcopolo South Africa Pty Limited, located in Johannesburg, started its operation in 2001, with a production capacity of 700 bodies per year. So far this production is fully absorbed by the local market. However expansion works in the plant are in Marcopolo's plans foreseeing growth in the African markets over the next few years. The expansion of the plants that are already operating should be the key to the growth strategy of Marcopolo's businesses in the world market in the short term. However, instigated by the success it has been attaining overseas, Marcopolo has other plans for the near future, and is keeping an eye on countries with large populations such as China, India and Pakistan. Marcopolo started to set foot in the Chinese market when it signed an agreement for technology transfer to a local plant of Italian IVECO.

From Largo do Arouche, downtown Sao Paulo, where it was only a workshop in 1939, to elegant Vienna in Austria, where the company now has one of its overseas plants, Sabo's leap was no less spectacular. Since 1994, when it took the risk of becoming a Brazilian multinational, as opposed to a national company, Sabo has not stopped growing. It already invoices over \$250 million a year and of that total more than 40% comes from its exports and its plants overseas. In fact since he purchased a screw vice and started making casting moulds for other company's machines, the Hungarian immigrant Jose Sabo understood that quality was something admired anywhere in the world and that machines and parts normally came from overseas. The great majority used to have a label that mentioned something about the progress of industry in their country of origin. In 1942, the Largo do Arouche workshop was already too small for Sabo's soaring plans. He

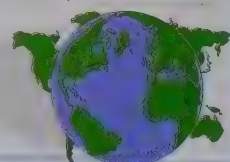
managed to find a better location in the Bras neighborhood where he founded Sabo e Reinholz Ltda., a small plant for automobile spare parts, an opportunity that arose because of the difficulties in importing caused by World War II. The clamps for accumulators and the rearview mirrors produced by Sabo were very popular. The production of retainers, which are still the company's leading product started with a chance order from a customer. Sabo went on to develop his own technology, improved the performance of the retainers and once again he had to expend the business by opening a plant that still operates in the Lapa district. Sabo's business boomed with the start of the Brazilian automobile industry. In addition to the retainers, he also started to produce joints, gaskets and water pump seals. Soon he became one of the largest totally Brazilian financed manufacturers of automobile parts and started to export, first to Opel, in Germany, and later to several other assembly plants in the United States.

After its quality baptism of fire to achieve the desired quality Sabo was ready to start its international adventure. The first acquisitions were in 1992, in Argentina. Closely following the creation of the South Cone market, Sabo purchased Todaro, a traditional manufacturer of automobile parts, operating since 1943, and Wol, that country's leader in the direct sales of retainers to vehicle assembly companies. Sabo

Presence of the Sabo Group

Worldwide

Country	Company	Employees	Built area
Argentina	Sabó Argentina	106	5.000
Áustria	Kako Áustria	162	5.000
Germany	Kako Alemanha	478	23.000
Hungary	Kako Hungary	210	6.400
U.S.A.	Sabó USA Inc	Offices for technical support and sales	
England	Kako UK	Offices for technical support and sales	
Italy	Sabó Italia	Offices for technical support and sales	
Australia	Sabó Australia	Offices for technical support and sales	



invested in the enlargement and modernization of its facilities that currently produce its retainers and gaskets in a built area of 5,000 square meters. In the following year, Sabo crossed the Atlantic heading to Germany, a country where the company had already won distinguished clients such as Opel, Mercedes-Benz and Volkswagen. To stay close to these manufacturers Sabo purchased Kaco, the second largest German manufacturer of seals at the time with plants in Germany and Austria. Expansion in Europe came soon after that with the help of the German government who participated in the financing of the \$6 million invested in the construction of a plant in Hungary. Operating since 1997, the 7,000 square-meter plant is located on the Vienna/Budapest axis.

Sabó wants more. Its plans include the world's largest market, the United States. In that country the company already has a laboratory for the development of products for General Motors and Delphi. So far these products are manufactured in Brazil and exported to the United States. The North-American market accounts for revenues of \$25 million a year to Sabo. A plant in the United States will allow the company to balance the offer of products made in Brazil that are more labor intensive, with those that use higher technology produced in the U.S.

Success stories like these are becoming more frequent every day. In fact, there has been a very positive response to the opening up of Brazil's economy since the 1990's. In the past few years the number of Brazilians expanding their businesses overseas has been growing, driven by various reasons, whether for the excellence of their products or their ability to produce at such competitive prices that they end up creating obstacles that often need to be overcome by the businesses located in the country of destination of the sales. From large industries, producers of agricultural or mineral commodities, to service suppliers such as law firms, everything is possible on the Brazilian doorstep that has been established in the world's major markets. This is a demonstration of agility and competitiveness

on the part of our entrepreneurs. In a recent survey conducted by the Brazilian Embassy in Washington it was found that at the beginning of 2002 no fewer than 150 Brazilian companies were operating in the United States, a country where Brazilian industries already enjoy a loyal and select clientele.

Today the largest Chilean exporter of jeans is a Brazilian company. This is another example of Brazilian entrepreneurs who attained excellence and competitiveness in their products. We are talking about Santista Têxtil, a traditional manufacturer of textiles that became the first Brazilian multinational in its sector when it purchased three plants outside of Brazil to support its large production of jeans and denim coloreds. These textiles are sold to a demanding clientele in several countries around the world, and especially to the largest consumer, the United States. The current company was created in 1994, but its true origin comes from the beginning of the twentieth century when it started to operate São Paulo Alpargatas, in 1907. The other side of the corporation, that of Santista, has been producing since 1929. The merger of these two companies gave rise to Santista Textil, controlled by the groups Alpargatas, with 45%, Bunge, with 45%, and Bradesco, with 10%. It has five plants in Brazil in addition to three overseas. It employs 5,000 people and consumes 10% of all the cotton destined to industry in the South Cone.

The success of its products in Brazil and abroad, especially jeans and denims, led Santista to expand its business abroad as from 1994, soon after the foundation of the present company and its new capital structure. In that year Santista Textil started a daring \$222-million investment program by modernizing its Brazilian plants and by the acquisition of two units in Latin America. Two plants were purchased, one in Argentina the other in Chile, operations that made the company stand out as the premier Brazilian textile multinational, despite the fact that this is the most traditional of all industrial sectors in Brazil, with decades-old companies and with a long tradition in exports. Santista Textil has no reason for complaints. In the following years,



The largest WEG complex for the manufacturing of electric motors, at its headquarters, in Jaragua do Sul (SC), Brazil.

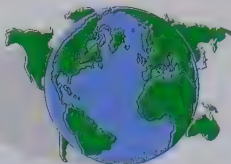
between 1996 and 2000, its revenues increased 56% and its value-added per capita doubled. In 2001, its invoicing came to R\$850 million but the fact that deserves most emphasis is that 50% of all the company's revenues came from exports. Amongst its clients are companies of the stature of, and as demanding as, Levy's. Orders from that market are growing constantly and for this reason Santista Têxtil already has plans to intensify its industrial presence overseas. The purchase or construction of a plant in Mexico, a country benefited by NAFTA tariffs, is being studied.

Protectionist obstacles, such as those for steel are generally adopted when the exporting opponent is competitive to the point of becoming a threat. If these obstacles led Gerdau and CSN to invest in plants in the United States, the battle involving orange juice is not something new nor is it any easier. Confrontation was inevitable. Responsible for some 30% of all orange juice consumed in the world the Brazilian company Cutrale did not give in. Faced with confronting an import duty of 7.85 cents per liter, or \$450 per ton imported, Cutrale leaped over the American trade barrier taking its productivity and business know-how to Florida. The largest state producer of orange juice in the United, Florida is also the main focus of that country's protectionism. That is exactly the reason why Cutrale, in 1996, purchased two large crushers in that state that used to belong to Coca-Cola. Cutrale was followed by another Brazilian company Citrosuco Paulista who also acquired a unit in Florida, internationalizing its operation and escaping from the protectionist barriers of the United States.

Votorantim, Brazil's largest industrial group, had another type of motivation to expand from

Santista Textil Countries
Worldwide

Country	Company	Structure
Argentina	Grafa	2 factories and 1 office
Chile	Machasa	1 factory and 1 office



LOCATION OF THE MAIN BRAZILIAN MULTINATIONALS

(mentioned in this chapter)

A = Ambev	P = Petrobras
C = CSN	Sb = Sabó
Ct = Cutrale	St = Santista Têxtil
G = Gerdau	VD = Vale do Rio Doce
M = Marcopolo	Vt = Votorantim
O = Odebrecht	W = Weg



1 - Argentina = **W St Sb P O M G A**

2 - Mexico = **W M**

3 - Portugal = **W O M**

4 - Chile = **St O G**

5 - Áustria = **Sb**

6 - Germany = **Sb**

7 - Hungary = **Sb**

8 - United States = **Sb P O G C VD Vt Ct**

9 - England = **Sb**

10 - Italy = **Sb**

11 - Austrália = **Sb**

12 - Colômbia = **P O M**

13 - Angola = **P O**

14 - Bolívia = **P**

15 - Nigeria = **P**

16 - Equator = **O**

17 - Peru = **O CV**

18 - Venezuela = **O A**

19 - South Africa = **M**

20 - Canada = **G Vt**

21 - Uruguay = **G A**

22 - Paraguay = **A**

23 - France = **VD**

24 - Bahrain = **VD**

25 - Belgium = **VD**

26 - Japan = **VD**

27 - China = **VD**

Brazil. Despite its size and competitiveness, the group had still not stamped its brand on overseas assets until May 2001. In this case, the aim was to expand the basis of its prosperous cement production business, an expertise that the group developed in Brazil over decades and on which it can now draw to compete anywhere in the world. When Votorantin took the first step in the direction of the internationalization of its operations it was tough going. The company started exactly with the American and Canadian markets when it acquired Blue Circle, a company that belonged to the French group Lafarge, one of the world's cement and construction material giants. This was a \$700 million operation that involved three cement plants—two in Canada and one in the United States—in addition to 39 concrete plants and nine cement terminals. By purchasing Blue Circle, Votorantim, a company that was already a leader in the cement sector in Brazil, increased its cement production capacity by 12%, taking it from 25 million to 28 million tons per year.

Also seeking to expand its business base and new scale gains, Ambev, the Brazilian giant of the beverage industry that was created through the merger of Brahma and Antártica, has already raised its flag in several Latin American countries. This has been a clear and successful strategy to occupy this territory as a basis for more daring international leaps in the near future. Currently it has plants in Argentina, Uruguay and Venezuela. Its products are found all over the continent and are also exported to the United States, Portugal, Spain, Italy, France, England, Germany, Switzerland, Angola and Japan. Ambev is already the fifth largest manufacturer of beverages in the world. Last year, it produced 80.8 million hectoliters of beers and soft drinks with net revenues in the order of R\$6.5 billion and net profits of R\$784.5 million, an enviable performance even when compared to its world peers.

However its internationalization does not show signs that the company will stop here. On the contrary, negotiations between Ambev and Central American Bottling Corporation (CabCorp), the anchor bottling company for

PepsiCo in Central America and active in the markets of Guatemala, Honduras, El Salvador and Nicaragua, are moving ahead quickly. A commercial and industrial alliance should come out of those negotiations to explore the Central-American and Caribbean beer markets. Before that, Ambev had signed an association agreement with Quilmes Industrial S.A. (Quinsa), the largest Argentine brewer, that produces 12.3 million hectoliters of beer per year, with a strong performance in the markets of Paraguay, Uruguay, Bolivia and a part of Chile.

A measure of courage also helps. Weg is not content to be one of the most successful Brazilian multinationals. It does not hide the fact that it wants to be the largest electric motor manufacturer in the world. When the three partners, Werner Ricardo Voight, Egon João da Silva and Geraldo Werninghaus founded a small motor plant they decided to pay a tribute to their town, Jaragua do Sul, in Santa Catarina. Eletromotores Jaragua Ltda started operations in 1961 in a leased hangar. It did not take long for tranquil Jaragua to become too small for the booming success of the business, first in the Brazilian market and, as from 1970, in several other countries through exports. Weg, the new name formed with the initials of its founders gained commercial impetus from the



Ambev: beer and soft drinks from Brazil gained new markets with plants located overseas.

growth in sales of its motors that were carefully built to be competitive anywhere in the world. From Jaragua do Sul to the world. This venture started with neighboring Argentina in 1994 by way of an operational agreement with the local leader, Corradi.

However, it was in 2000 that Weg decided to go further and acquire its own plants overseas. In Argentina, it purchased Morbe motor plant in Cordoba, and Intermatic, a manufacturer of circuit breakers located in Buenos Aires. In the same year, it purchased a plant that had belonged to world giant Asea Brown Boveri in Mexico City. In May 2002, Weg, which already had 5 plants in Brazil and was exporting to 50 countries, hoisted its flag in Europe. Its fourth unit overseas was purchased in Maia, a metropolitan area of the city of Oporto, Portugal. The plant produces special motors above 50 hp, made under technical specifications, and supplements Weg's line with medium voltage motors. With the expansion of its business inside and outside Brazil, Weg produces some 7 million motors per year and invoices R\$1.3 billion, which does not include the export revenues in excess of \$170 million a year.

On a Saturday evening, if it is possible to book a table, a curious visitor to Dallas or Houston, in Texas, can run into the president of the United States, George W. Bush. He is one of the habitués of the barbecue restaurant "Fogo de Chão", a multinational Brazilian



"Fogo de Chão", typical barbecue of Rio Grande do Sul, in the USA.

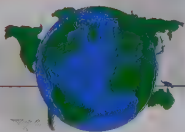
company that started in Porto Alegre (RS), in 1976. Brothers Ari and Jair Coser fromed a partnership with brothers Aleixo and Jorge Ongaratto. They set up business in the capital of Rio Grande do Sul and later conquered the São Paulo market. They then took their brand name, as well as their special cuts of meat, to the North-American market in 1993, where they accrue revenues of \$20 million a year. "Fogo de Chão" can also be found in Atlanta and Chicago. Other Brazilian-style barbecue restaurants have settled in Peking, in China, Milan, in Italy and other important cities scattered throughout the world.

It just goes to prove that Emilio Odebrecht's indignation is justifiable. In this book, we present only a few examples but there are many small or giant Brazilian companies making their names in international competition. This is another one of the aspects of the New Brazil that is recorded by the press but does not get enough attention. It is proof of Brazil's entrepreneurial ability, put to the test in the most demanding and competitive markets in the world.

Presence of the Odebrecht Group

Worldwide

Country	Company
Angola	Odebrecht Angola Ltda.
Argentina	Constructora Odebrecht Argentina S/A
Chile	Constructora Odebrecht Chile S/A
Columbia	Constructora Norberto Odebrecht de Colombia Ltda
Equador	Constructora Norberto Odebrecht del Ecuador S/A
U.S.A.	Odebrecht Conctruction Inc
Peru	Odebrecht Peru S/A
Portugal	Bento Pedroso Construções S/A
Venezuela	Constructora Norberto Odebrecht de Venezuela C/A





A Society made up of a Variety of People

When Salomão Nutels, a Russian immigrant to Argentina was returning to his country of origin to fetch his family, his ship made a re-fuelling stop at the port of Recife, the old capital of the Brazilian Northeast. This was in 1921. Salomão decided to stretch his legs and took a stroll around the port and came upon an amazing sight. At the end of the docks he spotted a Negro who was running with a "large and strange animal" on his head. The man was being chased by a group of vociferous people who appeared to be trying to recover the animal. Suddenly they drew closer and it seemed that they would catch the Negro but he didn't give up: he threw the animal to the ground and slit it open. With the animal apparently dead, the pursuers arrived on the scene and quite calmly they all set to eating the entrails. Salomão missed his boat, remained in the State of Pernambuco and later discovered that the spiny creature, or whatever type of animal he thought it might have been, was in fact a breadfruit. This story was recounted by his son, Noel Nutels, who was born in Anaviev on the eve of the First World War, and together with his mother, Bertha, joined his father a year after the animal-breadfruit incident in 1922. Noel graduated in Medicine at the University of Recife in 1936 and

dedicated his life to the preservation of the physical and cultural well being of the descendents of the Discovery. He created the Flying Doctor Service and became the Director of the Service for the Protection of Indigenous Peoples, a role that he occupied during the remainder of his life.

At that point in time those Brazilian Indians who had survived four centuries of subjugation and domination numbered about 150 thousand souls. The indigenous population in 1500 is estimated to have been between 4 and 5 million. Today, after three generations of dedicated effort and greater awareness on the part of Brazilian society, together with international campaigns, there are 701,462 indigenous Brazilians living in reservations that have been officially established all over the country, predominantly in the Amazon. They represent a population that has been saved from genocide. This extermination was often due to ignorance on the part of pioneers or, on other occasions, as a means towards political ends. This was the case of the Aimorés in the States of Bahia and Espírito Santo and the Potiguars in the Northeast. The history of the extinction of indigenous peoples in Brazil is no

different from similar events that took place throughout the Americas but in this country it took on gigantic proportions. Ignorance was all prevailing and this can be seen from the fact that, only in 1534, did Pope Paul III issued the edict *Veritas Ipsa* in which he declared that the natives should be considered as human beings.

The records kept by the Jesuits and pioneers relate their barbaric customs "they lived from hunting, gathering, fishing and a primitive form of root farming. They also lived for making war, a "sport" that was the preferred pass-time of the men in all of the different tribes. They married following an avuncular matrimonial system (the uncle on the mother's side with the niece) or between second-degree cousins. After combat there were anthropologic feasts that reinforced unity amongst the tribe and were a tribute to their fallen comrades". The support of the Indians was a decisive factor for Portuguese domination of the territory.

A large number of Tupis, that was the largest Brazilian tribal nation at that time, was recruited to fight against the Tapuias, a word that initially was thought to mean a number of scattered tribes but in fact meant "the enemy". This



An indigenous child in the state of Espírito Santo where genocide was deliberately practiced at the beginning of the occupation.

alliance with the native people allowed Portugal to confront the French and the Dutch. One of the most notable cases was that of Felipe Camarão who fought the Dutch, the Tapuias wherever he found them, and especially the Potiguars who took up arms under the Flemish flag. Felipe was decorated with the title of Cavalier of the Order of Christ and became a "Dom" and was rewarded with royal pensions. There were many others that followed in his footsteps by creating a lineage of indigenous chiefs that were honored by the Crown in return for their faithful service to Portugal.

However some tribes like the Aimorés and Potiguars, that have already been mentioned, carried out regular attacks against Portuguese settlements. The most notable and memorable events that ended in loss of life were those of the bestowed owner of the lands of Bahia, Francisco Pereira Coutinho who was devoured by the Tupiniquim in 1547, the Jesuit priest Pero Correia devoured by the Carijó in the port of Sao Vicente in 1554, and also the fate of the first bishop to Brazil, Dom Pedro Fernandes Sardinha who was eaten by the Caetés after his ship sank off the Brazilian coast in 1556. Opposition to enslavement of the Indians dates back to 1570 but it would only be officially validated in 1755 by way of a "Decree" that was intended to integrate the indigenous population into the life of the Colony.

The census carried out in the year 2000 showed a Brazilian population of 169.8 million inhabitants of which 53.39% considered themselves to be white, 38.88% of mixed blood and 6.13% to be black. Asian descendents came to 0.51%. Part of this white population would not really qualify under a rigorous appraisal. Even the President of the Country, Fernando Henrique Cardoso declared in one of his electoral campaigns that there was a "hint of the tar brush" in his family. A descendent of an illustrious military family, it is reasonable to assume that, in the past, one of his forebears paid an amorous visit to the Senzala, the place where the black slaves were quartered and were immortalized by Brazil's first renowned anthropologist, Gilberto Freire, who was born in Recife and is the author



The scientist Augusto Ruschi, a descendent of the Italians who founded Santa Teresa (ES).

of the classic novel "Casa Grande e Senzala". This book, published in 1933 and translated into many languages, refers to the creation of a superfluous, anarchic and antagonistic society that has a very special culture in which traditions can be lost with the same alacrity that they are formed.

Brazil experienced its first immigration at the hands of the Portuguese. During the first centuries of the Colony it received an influx of the elite in search of wealth. This was followed by an influx of poorer people principally in the second half of the nineteenth century. During the first two centuries more than 100,000 Portuguese came to Brazil. In the eighteenth century it was estimated there were 600,000 living here, a number that would increase by about 25,000 each year between 1901 and 1930. The total today is calculated by the Census as



A youngster of the negro race, that makes up a certain percentage of the Brazilian peple

being 2.25 million. The truth of the matter is that over the first few centuries Portugal's population was too small in comparison to the vast amount of land available in this New World. The majority was made up of the "excluded" such as the "new Christians" (Jews who had converted to Christianity) and gypsies. The elite actually arrived in force between 1808 and 1817 when they participated in the transfer of royal power to the city of Rio de Janeiro, chosen by Dom Joao VI as a place where he was safe from the perils of Napoleon Bonaparte. About 10 to 15 thousand well-educated Portuguese were living in the city at this time.

One of the best examples of Portuguese descendents in Brazil is Abílio dos Santos Diniz, the son of an immigrant, Valentim dos Santos Diniz, and owner of Brazil's largest retail empire the Pão de Açúcar (Sugarloaf) supermarket chain. It started out as a small general store in the 1950s and had revenues of R\$8 billion (\$3.4 billion) in 2001 and a net profit of R\$250 million (\$108 million). The French group Casino Guichard Perrachon holds 24% of the stock. There are thousands of Portuguese in Brazil who have

opened small stores or bakeries and although they may not have achieved the success of the Diniz family they can still be considered prosperous business people. A good number of them arrived with nothing in their pockets but have managed to grow their savings. It is a fact that a lot of gold and precious stones were taken from Brazil to enrich the Colonial Power but it also true that the cultural influence of the homeland left its indelible marks on the Brazilian people.

Brazil became the destination for thousands of Jews and "new Christians" that came from Europe and the North of Africa. Until the Inquisition paid a visit to the Colony, between 1591 and 1595 these immigrants were a part of local society, owners of sugar plantations in Bahia and Pernambuco, attended church and looked after their businesses. The "new Christians" also married with Indians, half-breeds and "old Christians" and a good number occupied important positions in government, the administration of public affairs and the clergy. The persecution of the inquisition was a time of ignorance and mistrust. The practice of the Jewish religion was only officially permitted two

centuries later in accordance with the Constitution of the Brazilian Empire, in 1822. Since this date the Jewish community has grown considerably. The impoverished Jews that started arriving from Eastern Europe after the assassination of the Czar in 1881 were taken in by the Yidishe Kolonizatsye Gezelshaft (the Association for the Jewish Community). When Salomao Nutels arrived in 1921 he was not alone. During the decade of the thirties with the promulgation of the Nuremburg Laws the European Jews knew that there was no evidence of anti-Semitism or persecution in Brazil and considerable numbers of them decided to move here. There was a hiatus in this immigration process during the years of the Estado Novo, (the New State), when the dictator Getúlio Vargas vetoed visas for "people of Semitic origin". However several Brazilian diplomats found a way around the law and conceded visas, as was the case of the Ambassador in Paris, Souza Dantas, who, by doing so, managed to save many lives. It is generally acknowledged that after the Second World War the Jews in Brazil started to participate in all spheres of life. Marriage between Jews and non-Jews became commonplace in all of the large cities in Brazil and it can be said that this has contributed to the growth of Brazil's middle class. Many Jews have become entrepreneurs, bankers, famous jewelers or successful business people.

It has to be said that the experiences of the Jews in Brazil cannot be compared to others that have occurred over the years. Much to the contrary there is a saying in Brazil that "being Jewish is already a victory", as Roberto Grun pointed out in a chapter called 'Building a place in the sun' in the book coordinated by the historian Boris Fausto entitled "The Making of America". Grun expresses his point of view that apart from living up to family responsibilities the Jew, in Brazil, is also seen as a likely contender for entering specialized markets, entrepreneurship, and even in networks that deal with human relationships. In other words Jews are considered as equals by the Brazilian elite and participate in this echelon of society. They frequent the corridors of power and can even boast a President of the Republic that reminded people of the fact

that he was descended from "new Christians" through one of the branches of his family.

Brazil was the country that most imported African slaves to the American continent. According to Joao Jose Reis "between the 16th and the middle of the 19th centuries, 4 million men, women and children were brought here, a number that represented more than one third of the total slave trade". This is probably not a realistic number as a lot of the slave trade was conducted clandestinely. Negro work substituted that of the indigenous people basically because they were easier to train especially when it came to working in the sugar cane plantations. What also has to be taken into consideration is the extinction of the native population and their averseness to constant work in the plantations together with the Portuguese interest in making these activities as profitable as possible. The black population also adapted better than the natives to working in the fields, for supplying local needs,



A woman of swiss descent performing the arduous task of collecting potatoes.

raising cattle, small manufacturing concerns, in domestic work and to urban life. It is a fact that the long history of the Negro in Brazil has turned him into a bona fide native of this country. The African was already accustomed to work in the fields and in the farmhouse and their children became mulatto or light skinned. The mulatto is a constantly recurring theme in Brazilian history and culture.

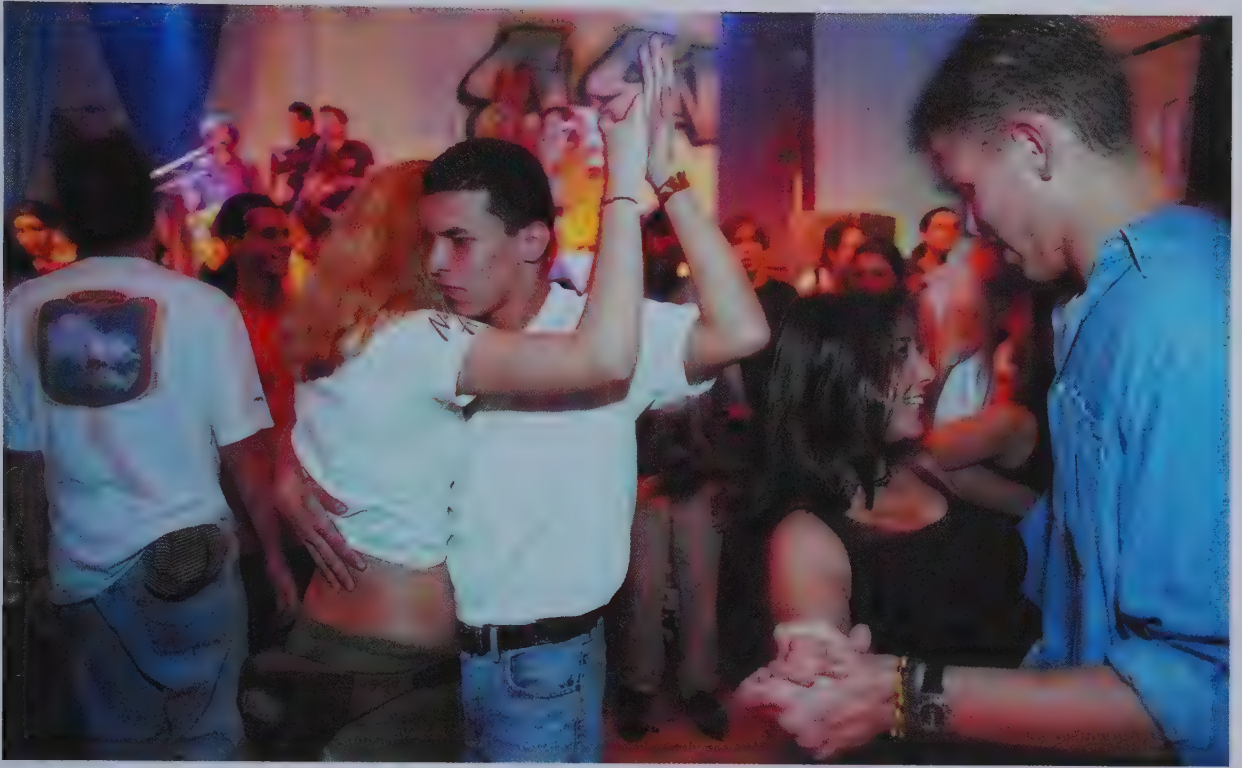
Brazilian society in the 19th century obstructed access to blacks due, principally, to racial prejudice. At the heart of this question lay the idea of a civilization based on European values and culture. This prejudice could be seen in the repression of cultural values and lack of access to certain professions that were considered to be the domain of the whites. The religious influence however favored a certain form of conviviality, "the promises made to the saints during catholic mass were similar to the requests made to the African gods and spirits in exchange for offerings of various types". The Imperial and Provincial authorities, noblemen, priests and police were uncertain whether to tolerate or repress the worship of African cults.

The appearance of the samba schools in the nineteen twenties represented a large step forward in terms of recognizing the position of the Negro in Brazilian Society through the carnival celebrations. Their music was samba, which brought in its wake capoeira that, today, can be learned in dance schools. Currently activities linked to black culture are thriving and it is to be hoped that this interest can be transferred to access to the workplace and all other productive activities.

The white population came from Europe as immigrants: the Germans started arriving in 1824, shortly after the Declaration of Independence of 1822, and were followed by an influx of Italians, Poles, Swiss and Spanish plus, of course, the Portuguese that always considered Brazil to be their second homeland. Arabs, principally from Libya and Syria, who were also Christians, started arriving in large numbers in the 20th century. But Brazil also received immigrants from Scandinavia, Holland, Belgium, the Ukraine and Russia in a constant flow that was only interrupted for a short while by the World Wars. Even Americans from the Southern states of the United States, after they



The frevo celebrations at the Olinda Carnival, in Pernambuco. The small umbrella is a part of the costume and adds to the revelry.



The Forró (from the English For all) is a place for dancing throughout Brazil, which has different names depending on the region: *bailão* in the South, for example. A scene at the KVA in Sao Paulo.

were defeated in the Civil War, sought refuge in the State of São Paulo where they founded the prosperous city of Americana. The Asian immigrants came mostly from Japan and kept themselves to themselves until the second generation. The Germans also held out for two generations before beginning to intermix, unlike the Italians who succumbed, in the first Brazilian born generation, to the charms and sensuality of the black and mulatto women that they saw parading in the Carnival commemorations in Rio de Janeiro.

The media consecrated the idea that samba and Carnival are national institutions in Brazil. Without a doubt, they are both strong and popular cultural institutions. In Rio de Janeiro Carnival is celebrated with samba and spectacular street parades; in Recife the music is called frevo and is accompanied by a myriad of small umbrellas; in Bahia it is based on the rhythms of the candomblé religion, capoeira and all of the Afro-Brazilian creativity. In Parantins, in the State of Amazonas, the Carnival is celebrated with a dramatic representation of the crowning of a king that dates back to the times of the Congo and in Curitiba with waltzes or tarantellas mixed with

samba. It is in Curitiba, considered to be the most organized city in Brazil, and extremely well run by the architect Jaime Lerner over the last twenty years, who was substituted by another member of his technical team, a second generation Japanese Cássio Taniguchi, that Carnival is nothing more than a date on the calendar recognizing the existence of Mardi Gras. This is a fact that is criticized by many business people in the South of the country who would prefer to take commercial advantage from the holiday. Initially there were three holidays: Sunday, Monday, and Tuesday. Later, Saturday was added to the list and in a number of States the festivities have been extended to a week and have also incorporated the "micareta" which is a mini-Carnival that takes place in the month of October.

Curitiba is considered to be the most European of Brazilian cities. Its name comes from the indigenous Guarani language and translates as *ksori*, a chestnut that comes from the *aruacaria* (the Brazilian pine tree) and *tiba* meaning plenitude. In 1820, the French biologist and naturalist, Auguste de Saint-Hilaire was surprised by what he encountered "men who were genuinely light skinned and women with



The bull "Garantido", an opponent of the bull "Caprichoso", dances to the music at the Festival of Parintins (Carnival), very popular in the Amazon.

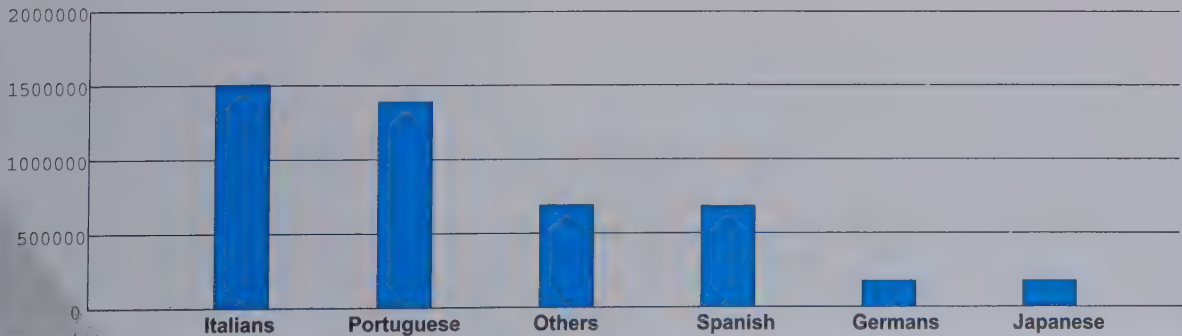
features that were more refined than those found in the rest of the country". The city has an average annual temperature that is more amenable than the majority of the main cities in Brazil (17 degrees centigrade) and grew with the influx of Germans, Poles, Italians, French, Swiss, Austrians, Japanese, Syrians and Lebanese. Today Curitiba has a population of 1.5 million and boasts one of the highest economic and social living standards in the country. Literacy is confirmed at 94.5%, infant mortality at a rate of 19 per thousand births, and drinking water and electric energy is supplied to 99% of homes. Garbage is collected from 97.5% of the homes in the metropolitan region and the system can boast integrated and efficient transport. The city is recognized internationally as a model in terms of urban planning and for finding solutions to its community problems. According to data supplied by Zoilo G. Martinez de Vega, a correspondent for EFE, Brazil will need investments of \$80 billion to align the rest of the country with the quality of life that Curitiba offers.

Living life to the full is a characteristic of Brazilians and this can be found in their pass-ti-

mes and working hours. Nutels didn't go into details but it is quite possible that the Negro running with the supposed animal-breadfruit on his head was a stevedore in the port of Recife. This underlying happiness may have been handed down from the female spirit of the natives: "The indigenous Brazilians at the time of the Discovery were still living in a regime where the men were virtually parasites and the women were overworked. It was from the creative hands of the woman that all the art, industry and agriculture flowered", wrote Gilberto Freire. Not forgetting the liberty of sexual freedom that was stripped away by the principles imposed by European religion and that left the impression of a naturally lascivious person. The ability to adapt - another Brazilian characteristic - certainly did not come from the Indian influence but more probably from the Negro side without forgetting the same facet that can be found in the Italians. Thus, Brazilians are capable of a gratuitous gesture or, in the words of Luigi Berzini, referring to the people from the Peninsula and that also apply perfectly to the tropics, they are equally capable of subterfuge, "a craftiness, brilliant improvisation, a devious strategy, an act of courage or villainy,

Immigration statistics

Period	Italians	Potuguese	Others	Spanish	Germans	Japanese
1884-1893	510.533	170.621	66.620	113.116	22.778	-
1894-1903	537.784	155.542	49.944	102.142	6.698	-
1904-1913	196.521	384.672	155.025	224.672	33.859	11.868
1914-1923	86.320	201.252	71.893	94.779	29.339	20.398
1924-1933	70.177	233.650	184.986	52.405	61.723	110.191
1945-1949	15.312	26.268	29.552	4.092	5.188	12
1950-1954	59.785	123.082	84.851	53.357	12.204	5.447
1955-1959	31.263	96.811	47.599	38.819	4.633	28.819
Total	1.507.695	1.391.898	690.470	683.382	176.422	176.735



Fonte: Nonon

or something simply spectacular".

The Italians were the largest contingent of immigrants to come to Brazil after the unification of their country in 1862. Currently the number of their descendents outnumbers any other race in the Brazilian population - it is estimated that there are about 23 million of which around 1 million have dual nationalities - Brazilian and Italian. In 1902 the historian Aureliano Leite from Minas Gerais stated, "My ears and my eyes are the guardians of unforgettable events. I think the heart of Italy beats in Sao Paulo. On the trams, in the theatres, the street, the churches you hear the language of Dante being spoken more than that of Camões. The Italians represent the most powerful and numerous group of industrialists and businessmen. The employees were also Italians". The Sao Paulo accent has an open tone to it, which was certainly inherited from the immigrants. From 1876 to 1886 Veneto was the source of the largest number of immigrants who settled basically in Rio Grande do Sul and the State of Espírito Santo. In the years that followed it was the turn of the province of Campania and Sicily to occupy the second and third places in

numbers of immigrants and their destination was Sao Paulo where they found work on the coffee plantations. The Italians from the north of the country also arrived in Sao Paulo but dedicated themselves to manufacturing activities - they were painters, stonemasons, carpenters, ironsmiths, shoemakers, construction workers and business people. There were also journalists, many of them anarchists, "thanks be to God", as the wife of Jorge Amado, professor Zélia Gattai, once stated.

It is a fact that between 1824 and 1932 about 35 million Europeans found their way to Brazil including 10 million Italians. Austria/Hungary contributed with 5.1 million, Germany with 4.8 million, Spain with 4.6 million and following on we see 2.2 million Russians, 1.8 million Portuguese, 1.2 million Swedes, 845 thousand Norwegians, 642 thousand Poles, 519 thousand French, 387 thousand Danes, 371 thousand Finns, 332 thousand Swiss, 224 thousand Dutch, 193 thousand Belgians, and 63 thousand Maltese. Over this same period of time Brazil also received 518 thousand Japanese immigrants. At first, as we mentioned before, most of these races kept to themselves but with the passing of time



A descendent of parents from Lebanon and Italy. Evidence that marriage has become free from racial prejudice in Brazil.

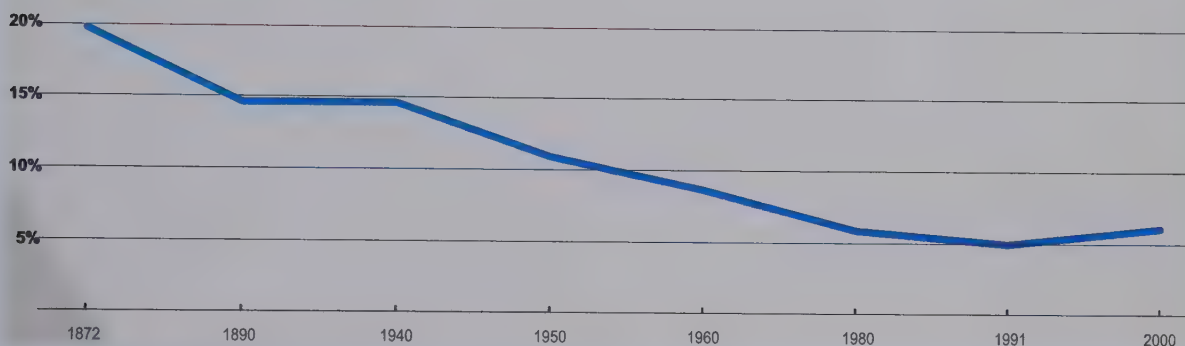
Brazilian population based on skin color

(in %)

Color	1872	1890	1940	1950	1960	1980	1991	2000
White	38,14	43,97	63,47	61,66	61,03	54,23	51,67	53,39
Black	19,68	14,63	14,64	10,96	8,71	5,92	5,01	6,13
Mixed	42,18	41,40	21,21	26,54	29,50	38,85	42,53	38,88
Yellow	-	-	0,59	0,63	0,69	0,56	0,43	0,51
Not declared	-	-	0,10	0,21	0,07	0,44	0,37	-
Total (pop.)	9.930.478	14.333.915	41.236.315	51.944.397	70.191.370	119.011.052	146.521.661	169.799.170

The decline of the negro participation

(in %)



Source: IBGE

intermingling became commonplace. All of a sudden we could find Indians with green eyes, blue eyed mulattos and dark eyed whites in a splendor of human beauty that even extreme poverty is sometimes incapable of hiding.

The 19th century immigrants, different from their predecessors who came in search of wealth and riches, arrived to work and create large families. The Matarazzo family started by canning pork fat and went on to build an empire that has not survived to this day but nonetheless the family still retains its prestige. One of the descendents is Brazil's Ambassador to Italy, Andrea Matarazzo. Anonymous immigrants often did not meet with the same good fortune whilst they were alive. Their descendents, however, achieved many of the dreams of their fathers and grandfathers. One example is Raul Anselmo Randon, 73 years old, and the head of 11 companies manufacturing transport equipment, automobile parts, and farm machinery, with headquarters in the town of Caxias in the State of Rio Grande do Sul. The company also has businesses in the United States and Europe. A grandson of Italians from the north of Italy, Raul is the CEO of a company with revenues of more than \$1 billion. Randon,

who belongs to an old traditional family, already started preparing the ground in the nineties to hand over power to the next generation that will be guided by professional council.

Obviously he didn't need to do this but Raul went ahead anyway. In the mid nineties he decided to get involved in an old Italian tradition but at the time it was an innovation in Brazil and something that would keep him occupied whilst the new generation took over the family business. He started producing, in the town of Vacaria, grana padano cheese with technology, machinery and technical assistance brought from Italy. Even the cows were imported. Already in the year 2000 the "formaggio pregiato, da tavola o da grattugia, tipico della Pianura Padana", obtained its ISSO Certificate of Quality granted by the Norwegian certification company "Det Norske Veritas (DNV)". Raul's passion can be felt when he tells people that nobody talks to him now about trucks, brake systems or the axles that were a part of his life since 1949 when he founded his first factory together with his brother Ercilio, both of them qualified ironsmiths. This new cheese, a type of Brazilian Parmesan, after going through a twelve-month period of curing can be found



Pomeranian children, already the fourth generation Born in Brazil.

on the shelves of large supermarket chains like Pão de Açúcar that belongs to Diniz, or the nationwide Carrefour chain. Production reached 20 tons per month in 2001 and this year should top 24 tons (28 vats per day) that are processed and stored in a constructed area of 8 thousand square meters. RAR, is the name of the cheese bearing the initials of its mentor and it is produced on a farm of 15 thousand hectares in a region that is both dry and cold. This is where Randon Agro-silvo Pastoril has planted 850 hectares of apple orchards that produce 36 thousand tons per year (5% of the total Brazilian crop), cultivates 1.5 thousand hectares of corn, 3.5 thousand hectares of soybean and raises 5 thousand head of cattle.

The first nucleus of the colonizers in the State of Rio Grande do Sul was established in the mountains of the Serra Gaúcha. The region quickly became prosperous and important towns cropped up such as Caxias do Sul, Bento Gonçalves and Garibaldi. The living conditions encountered by the first immigrants in 1870 were by no means easy. In Santa Catarina the Italians had to seek help from the German colonies that had arrived before them and they found themselves being exploited and discriminated. In Paraná, however, grouped around the Curitiba region, they were welcomed and became successful because it was not difficult to transport foodstuffs and also a large number of immigrants went to work on building the railroads, first in the mountainous region that connected the port of Paranaguá to the capital and later the link between Curitiba and Ponta Grossa. Curiously, quite close to Curitiba, the emperor Dom Pedro II permitted the establishment of an anarchist group called "Colônia Cecília" which was short lived. Utopia was not achieved once again.

The first Italian immigration that was officially recognized took place in the State of Espírito Santo where Pietro Tabacchi arrived in 1851 and settled on the farm "Monte delle Palme". Tabacchi's success led him to bring over 388 people from Trento together with a priest, a doctor and an assistant who answered to the name of Pietro Casagrande. They arrived to work in

the region of Santa Cruz where today we find the enormous Aracruz cellulose factory. It was in this coastal region that Tabacchi was extracting mahogany with the permission of the government of the Province of Espírito Santo. The project was short lived: the colonizers were treated badly and humiliated which led them to move to the Serra do Mar (a mountain range near the coast) where they founded the town of Santa Teresa recognized as being the first Italian town in Espírito Santo. Beginning in 1878 there was a constant influx of immigrants to Espírito Santo. They came from Veneto and Lombardy and colonized almost all of the southern half of the State. They received from 15 to 50 hectares of mountainous terrain that they were supposed to clear, occupy and plant. The properties were sold to the new arrivals that paid for them with a grace period of five years. Presently 52% of the 3 million people living in the State of Espírito Santo are descended from those early pioneers. The Italian Court suspended the emigration at the end

Estimated population of native lands

(in relation to the the states)

State	Estimated Population
TOTAL	302.888
Amazonas	78.701
Mato Grosso do Sul	38.392
Roraima	24.194
Mato Grosso	18.186
Pernambuco	16.639
Para	16.305
Maranhao	15.916
Rio Grande do Sul	12.298
Bahia	11.396
Acre	9.240
Paraíba	8.214
Ceara	7.312
Parana	7.193
Alagoas	6.908
Minas Gerais	6.623
Rondonia	6.126
Tocantins	5.583
Amapa	5.474
Santa Catarina	5.123
Sao Paulo	1.758
Espírito Santo	884
Sergipe	230
Goiás	171
Rio de Janeiro	22

of the 19th century because of the discrimination endured by the early arrivers.

São Paulo became home to the largest contingent of Italians in the south of the country. They were mostly braccianti or manual workers that went to work on the coffee plantations. They worked in extremely poor conditions normally substituting the black slaves. "The families used to agree to a work contract that obliged the women and children to work as well. The contract also determined that each family would be responsible for a certain number of coffee bushes and would receive a pre-determined amount of money for each bush that they picked". "They had the right to a roof over their heads and to a plot of land where they could cultivate vegetables for their own use and they were also allowed to plant corn and

beans in the strips between the coffee bushes. Many of them abandoned the plantations as soon as they could and moved to the cities where they found work as manual laborers or set up small businesses that would turn into a huge number of industries that proliferated in Sao Paulo. In the capital city they also became involved in strikes and became active members of associations, leagues and trade unions that, in general, were left wing oriented or plainly anarchist. They founded newspapers and encouraged the first meaningful social movements in Brazil.

The first German colony in Brazil was established in São Leopoldo (Rio Grande do Sul) in 1824. The immigrants came from Saxony. The second colony was founded in Santa Isabel in the State of Espírito Santo in 1847. This was

The evolution of legislation concerning native people		
1570	First law against imprisoning a native	This law only permitted the enslavery of a native in the case of war
1609	Law reaffirming the freedom of native people in Brazil	An important law that attempted, once again, to establish the freedom of the natives that was being threatened by the colonizers
1686	The Regimento das Missões Decree	Established a base for regularizing missionary work and the participation of indigenous workers in the States of Maranhão and Grão Pará
1755	A Decree is approved that established, by way of specific measures, the integration of the Indian with the life of the colony	Absolute prohibition of using natives as slaves
1758	End of indigenous slavery: this decree was applicable to all of Portuguese America	Secularuzation of indigenous villages: abolishment of slavery, tutorship of the religious orders in the villages and the proclamation that the native people were vassals of the Crown
1798	The Decree is abolished	The integrational spirit of the Decree would still hold weight when the legislation of the Brazilian Empire was drawn up
1845	The Regulamento das Missões is approved	The objective of the Decree is reaffirmed and emphasized "the total integration of the Indians"
1910	The Indian Protection Service was created	The Republic took over the tutelage of the indigenous people
1952	Rondon announced his project for creating the Xingu National Park	The aim was to create a protected area for the Indians
1967	The National Indian Foundation was created	This substituted the extinct IPS in terms of administrating indigenous matters
1979	Creation of the Union of Indigenous Nations	The first attempt to protect indigenous culture that was an important step to recognizing Indian rights in the Constitution Bill of 1988

the destination for Germans from Hunsruck, Pomerania, Rhineland, Prussia and Saxony. Over the following years the colonies of Santa Cruz do Sul (RS), Blumenau (SC), Joinville (SC), Santa Leopoldina (ES), Santo Ângelo e Nova Petrópolis (RS), Brusque (SC), Teotônia (RS), Rio Negro e Curitiba (PR) were founded. Apart from the regions already mentioned the immigrants also came from Silesia, Bohemia, from Westphalia, Hanover, Braunschwig, Baden Oldenburg and from Volga (Volga Teutons). The colony in São Leopoldo was the first attempt at populating the South and proved to be a success for the Imperial Government's program for immigration. But not all of the immigrants became landowners: a good number were craftsmen, industrialists, businessmen, clerics and teachers.

According to the scholar Valdir Gregory, "the Germans spread everywhere and staked out their territory wherever they could". One trait of this expansion was the great number of Lutheran churches that could be found on these new frontiers. In 1922 there were 375 church parishes belonging to the Lutheran Confession of Brazil of which 237 were located in the South, 64 in the Southeast, (31 in Espírito Santo), 26 in the Midwest and 18 in the Northeast. But the Germans held out for a long time in the face of pressure from the Brazilian government to adapt their culture. They preserved their language in both churches and community schools and their traditions were passed down through several generations. They encouraged the publication of newspapers and literature and made important contributions in the areas of architecture, food, choirs and musical bands. A good example is the Oktoberfest commemoration that arose as a protest against the dictatorship imposed by Vargas during the period of the "New State" that had banned manifestations of foreign culture. Today this is an enormous celebration visited by Brazilians of all races and creeds. The descendents of the German pioneers adapted well to the country and there are countless examples of entrepreneurs that went on to make their fortunes, as we related in chapter 8 of this book. They absorbed the friendly spirit of the Brazilians and

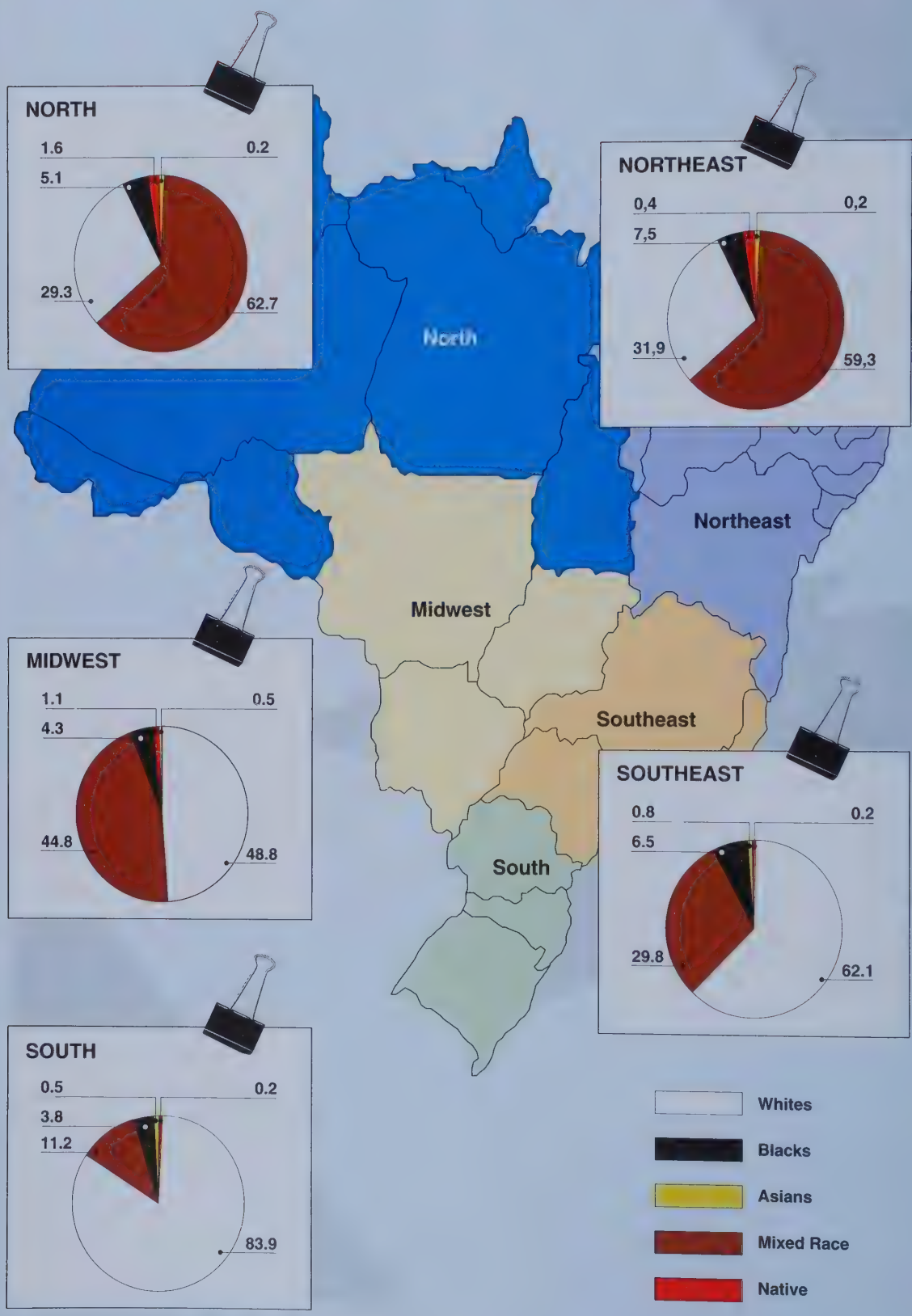
this has often paid off in their work. There are many cases where Germans have returned to their homeland and proved to be excellent managers in factories working with foreign labor. The same can be said of Italian descendents who were sent to China to look after the day-to-day tasks of a company and got along well with the workers.

It is not by chance that the operations of Parmalat - an Italian multinational - are directed from Brazil. The return journey, two or three generations later, is not as easy as it would first appear. This can be seen in the case of the Japanese who returned to the country of their ancestors in increasing numbers as from the beginning of the nineties. Today there are more than 200 thousand Brazilians working in Japan who are sending back to Brazil more than \$1 billion a year. They make money over there but invest it here, which is a sign that one day they intend to return. Images of these Japanese descendents, often considered to be second-class citizens, were shown on television during the recent World Cup. They cheered as Brazilians, often wrapped in the Brazilian flag, all the way to the end of the competition when, of course, Brazil was the victor and raised the trophy for the fifth time.

The first Japanese immigrants arrived in the port of Santos on the 18th of June 1908. They encountered resistance because their arrival was contrary to the policy of trying to "whiten" the Brazilian population, a policy prevalent in the 19th century. This resistance would raise its head again during the imposition of the "New State". Curiously Brazil opted to lend support to the allies and sent troops to Italy to collaborate with the American Fourth Army. Amongst the Brazilians that fought on Italian battlegrounds there was a considerable number of offspring of Italian descent and also a second-generation Japanese lieutenant, Massaki Udihara. He was a doctor but fought in the infantry and left a diary, published recently, that is an illustration of the Brazilian people. It is a critical, ironic and tough report that was directed to the chain of command and not to his fellow soldiers.

Kaori Kodama says in an appraisal of the immigration that the "succeeding generations of

ETHNIC BREAKDOWN



descendents of the first immigrants, the sansei (third generation), the yonseis (fourth generation) more than the nisei (second generation) are less involved by the traditions of the colony and have proved themselves to be more integrated in Brazilian culture than their forefathers".

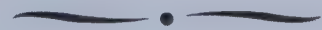
The majority of these new generations, truth be said, do not even speak Japanese. Many have married Brazilians from various origins but they still conserve some traditional values such as a warrior spirit and self-control. In general terms they exhibit an image of honesty, devotion to studies, intelligence and discipline. They furthered the reinvention of foodstuffs and popularized the traditional cooking of their ancestors and at the same time embraced typical Brazilian food like beans and grilled meat most commonly found in the South. The hot tub form of bathing that was restricted to the old traditional bathhouses has now become popular and can be found in many homes in Sao Paulo and Parana.

One important sign of unification is the Brazilian kitchen that has developed from an amazing miscellany of tastes and flavors. At the same time you can go out and eat sushi you can also enjoy a kibe, a dish typical of the people from the Middle East that came to the country in the second half of the 19th century. They also helped swell the population during the 20th century. They came from a number of different countries but the majority are Syrians, Lebanese and Turks and it is interesting that as far as Brazilians are concerned they are all known in popular jargon as Turks. One of their most significant traits was their feeling for street-level commerce. They introduced a whole new approach to this activity: they redefined the concept of profit, high turnover, special offers and sales. With the passing of time the descendents also dedicated themselves to intellectual activities. They became writers, technicians and doctors. One can also find a lot of people of Arab descent involved in Brazilian politics standing for conservative parties or popular causes.

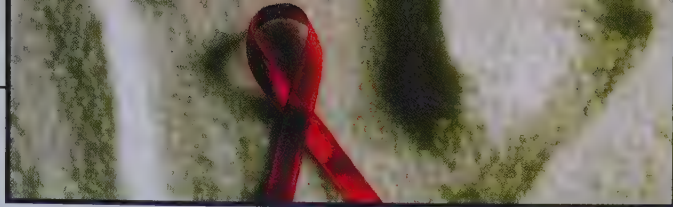
Capistrano de Abreu, a revered historian of the 19th century, certainly made a mistake when he said that the Spanish had not contributed

anything to the growth of the nation. It has to be pointed out that the presence of the Castilians has been with us since the days of the Discovery. It has been somewhat in the background but nevertheless it has made its mark. The priest Jose de Anchieta, beatified and appointed as the "Brazilian Apostle", was Spanish. He was born in the Canary Islands. It was during Spain's domination of Portugal, during the so-called Iberian Unification, (1580-1640) that Brazil expanded its territories in the West. Apart from the fact that the statistics referring to the immigration are somewhat vague and unreliable, the Spanish were probably the third largest colony of immigrants after the Italians and Portuguese. In Rio de Janeiro the newcomers from Galicia were confused with the pejorative name given to the Portuguese that were called "Galician". In Salvador, Bahia, the Spanish did not participate in the immigration process because they arrived with the guarantee of a job. "They were invited by their countrymen and relatives who were already the owners of small commercial establishments, bars and hotels".

Over recent years Brazil has received a number of immigrants from all parts of South America, but especially from Argentina, Uruguay and Bolivia without forgetting the Asians, represented mostly by the Koreans who have made their presence felt in São Paulo. Although there is no specific policy or even a deliberate intention to take in new waves of immigrants the country continues to be a place that is open to everyone. At the end of the day, Brazil is a country where each nationality can find some kind of roots and feel like an inhabitant of Mother Earth. But there is no doubt that Brazil is still a country going through changes, founded on the broad specter of Christian and Western culture, and inspired by the natural freedoms of its origins. There has certainly been an integration of all the different peoples that arrived on these shores but steps need to be taken to improve the education of the boatman, the Indian and the medieval man mentioned earlier and place them all on the same level.







Health in Brazil leaves the Intensive Care Unit

The New Brazil commenced the new millennium in better health. Or, we could say, less sick. The last decade of the 20th century was not a lost one for Brazilians who are very familiar with chronic and endemic diseases accompanied by other outbreaks of illnesses that were eradicated long ago cated in other countries and continents.

Perhaps these are still early days to compare Brazilian statistics with those of developed nations or even with development in this sector in countries of Brazil's importance in regards to the sicknesses that still afflict our countrymen and women. But the indices attained over the last ten years, and especially over the last five, are worthy of placing the country in a privileged position in many aspects of fighting old and new diseases that are the bane of humanity.

For a large number of local and even international specialists the nineties were the years of large transformations in the Brazilian health system. One can see that during these years a real public system for universal and free healthcare was created. This system, today, is operating efficiently and is not only a motive of pride for the government but for thousands of Brazilians as well.

The structural problems of health in Brazil have still not been solved and there are still some serious obstacles and major challenges. But it is undeniable that the overall picture has changed, and changed for the better. This improvement can be observed in various ways. One of them, and perhaps the most expressive, is the continuous decline in mortality. The decline in infant mortality is the leading light of the positive results obtained over these years. But there are other reductions in mortality that are just as impressive.

In 1990 for every one thousand live births 48 children died. In 2000, this number had dropped to 29.6. Over this period the lives of 404 thousand infants in their first year of life were saved. Of this total almost a half can be found in the Northeast. In fact the Northeast region was the one with the best results: from 73 deaths per thousand this number dropped to 44 in 2000, a decrease of almost 40%. In the South and Southeast regions infant mortality (19.7% and 20.6% respectively) are close to

The drop in infant mortality

	Before 1990	After 2000
Brazil	48,0	29,6
Northeast	72,9	44,2
North	45,1	29,2
Midwest	31,3	21,2
Southeast	30,2	20,6
South	28,7	19,7

Source: IBGE, Censo de 2000

the standards established by the World Health Organization that considers a factor of 20 deaths for every 1000 births.

With these results we surpassed the target-2000 of the United Nations that was set in the Summit for Children and established a number of 32 infant deaths. Technicians from the IBGE calculated an index that was a little higher, 33.5 deaths per thousand. It is clear, however, that this positive result is no excuse for us to lower our guard in the fight against infant mortality. On the contrary it should ser-



A child from Brasilia receiving a vaccine on the opening of the "National Immunization Campaign" and tenth anniversary of the end of poliomyelitis in Brazil.

ve as a symbol to maintain the current policies for public health in Brazil. Policies that come up with good results should carry on, be maintained, encouraged and, whenever possible, augmented.

The rate of the decline in infant mortality is the most expressive of all and should be permanently praised and commemorated. But it is important to point out that this is accompanied by other notable achievements that present an optimistic view for the future of children in Brazil. There was a significant drop in infant malnutrition. Poor children received better food and between 1995 and 1999 deaths caused by malnutrition fell by 61%.

The President of the Republic, Fernando Henrique Cardoso, commented upon this fact in a message to Congress in which he emphasized "the mortality rate is fundamental for assessing the quality of life. The nineties were not a lost decade. In terms of social issues it was a decade that accelerated the process of social change in Brazil. We surpassed the ONU target for reducing infant mortality. Brazil surpassed itself in its efforts and managed to reduce mortality even more. We reduced the problem of social outcasts in Brazil. Period. It is plain to see that, yes, we are fighting inequality and poverty with all of our forces".

In the same speech the President stated, "the numbers regarding infant mortality come from very precise research and this did not happen by chance. It happened because we have public policies that lead to this end. There are no miracles. There is only work. It is not in a blink of an eye or even from one decade to the next that we can progress from precariousness to sunny skies. But it is possible to keep on improving. There are still clouds in the sky but at least we can see the sun. The nineties were not a lost decade".

A Program to encourage the fight against Nutritional Deficiencies that was launched in 1998 arrived in 2001 with an impressive track record and marked its presence in more than five thousand Brazilian municipalities. This program benefits more than one million children and expectant mothers with the

distribution of milk and other products that are known to be efficient in combating malnutrition. Basically it seeks to fight lack of iron and vitamins. Just in the Vale do Jequitinhonha, in the State of Minas Gerais, which is one of the poorest areas of the country, more than four million doses of vitamin A were distributed to children between six and nine months of age.

And in the municipalities of the Northeast that participated in the same program there was a drop of 14% in malnutrition between June 1999 and April 2000, in other words in less than one year. An impressive achievement, especially for those who are familiar with the negative aspects of the region and the difficulties children in the Northeast have been subjected to for hundreds of years. There is more. Diarrhea is no longer the threat it was to the new born because the number of children less than one year old that were attended in the SUS medical posts between 1995 and 2001 fell by 40%. And deaths caused by this illness dropped 71%. Pneumonia experienced a decline of 48%.

Since the end of the eighties Brazil has been working hard to increase the period of breast-feeding with nation wide information campaigns. From then until now an impressive victory has been achieved with an increase from the average of 5.5 months in 1989 to 9.9 months in 1999. At the same time large investments were made in programs for school meals to provide continuity in accompanying the growth of children. Currently the nation-wide program is reaching out to 37 million children. According to the Brazilian

Consultations carried out by SUS (in million)

Region	1997	1998	1999	2000
Brazil	361,49	357,09	375,42	395,34
North	16,76	16,68	18,72	19,89
Northeast	94,98	89,40	94,71	100,40
Southeast	178,73	178,95	187,70	194,96
South	48,19	48,36	50,66	55,90
Midwest	22,83	23,69	23,62	24,19

Source: Ministry of Health



A special program for vaccination against influenza that is free for Brazilians over 60 years of age.

government this is considered to be the largest food distribution program in the world.

A large country, but also a sick one. That was Brazil's lot for many decades and it tried to explain its woes with the phrase that it was sick because it was big and couldn't eradicate its illnesses because of its size. One excuse followed another and masked the lack of political volition and the corruption that countless times impeded the implementation of programs that had been well structured and were full of good intentions.

This happened, for example, in the case of vaccination, an almost interminable national drama that insisted on placing Brazil amongst the worst statistics in terms of world health. In the last decade and with political resources and support the panorama changed.

Vaccination of children became a routine measure for the health services and was one of the major contributors for the decline in infant mortality. In the last 6 years the National Program of Immunization vaccinated 100% of children less than one year old with BCG immunization.

The Ministry of Health maintained the eradication of poliomyelitis. There has not been one registered case in Brazil for the last twelve years.

A vaccine against Hepatitis B is being applied to people under twenty years of age throughout the country.

To combat one of the main causes of meningitis in infants, the Ministry of Health carries out routine vaccination programs against type b *Haemophilus influenzae* for children less than two years of age.

Preventive actions, together with vaccination have also made it possible to control illnesses such as tuberculosis, tetanus, whooping cough, diphtheria, measles, rabies, yellow fever and mumps.

In June of 2000 a gigantic vaccination campaign against measles covered 16 million children between 1 and 11 years of age representing 100% of all the children in this age group. The vaccination program was carried out throughout the whole of Brazil and was part of a world program to stamp out this

disease with support from more than thirty countries. Since then there have been no registered cases of measles.

To bring up healthy children it is also necessary to count with the help of the mother. In 1994 pre-birth consultations attended to 1.8 million women. In 2000, 9.9 million women received this same treatment. Today, the number has already surpassed 10 million, numbers that speak for themselves in terms of the success and acceptance of the Health Program for Women. There are even more eloquent statistics: cancer in the colon of the uterus has always been a large problem for Brazilian women. Jacob Klingermann who is a well-known doctor in Rio de Janeiro and a cancer specialist, President of the National Institution for Cancer, told me that his hair turned gray - and he lost a good amount of it at the same time - whilst trying to convince successive governments to confront the problem. When he spoke to me he was far more optimistic because Brazil had reached the statistic of 33 million preventive tests. The program was launched during the first mandate of President Cardoso when cancer specialist, Dr. Marcos Moraes was President of the National Cancer Institute.

During the World Conference for Women, that took place in China in 1995, Brazil committed to develop a campaign to eradicate cancer of the colon of the uterus that is responsible for 16% of the deaths caused by cancer in Brazilian women between the ages of 35 and 49. The following year the illness started to be tracked by way of successive campaigns for preventive tests. In 1998 this program could be found in 98% of Brazilian municipalities. From then until now the number of examinations has passed the mark of 33 million.

Recently, in Brazil, we have seen the participation of theatre, cinema and TV celebrities in publicity campaigns for the Ministry of Health. Amongst them we find one of the most famous anchorwomen of Brazilian television - Hebe Camargo. With her

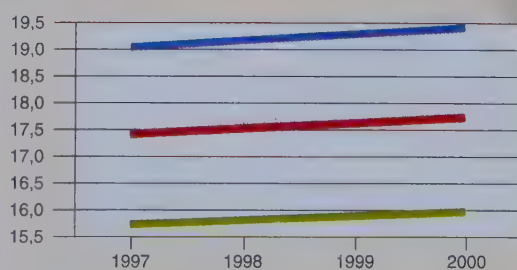
inimitable smile she admits that she is getting close to seventy years of age and reveals, "yes, I take a regular vaccination against the flu". The overall effect could not have been better. The circle was closed - after the children and expectant mothers the official campaign had now reached the senior citizens that were historically another group excluded by the powers at be. Special programs were drawn up to look after this age group.

Health and the prevention of illnesses: from 2000 until April of 2002 almost three billion reais were spent on health-care for the elderly where there are more than five million patients over 60 years of age. Just in 2001 eleven million senior citizens were vaccinated representing a total cover of 82%.

We also witnessed campaigns against discrimination involving the elderly that encouraged the humanization of hospital services by training people to deal with senior citizens apart from a specific program to assist people suffering from Alzheimer's disease. The Health Ministry also carried out national campaigns to treat people suffering from varicose veins, cataracts and prostate cancer. An intensive campaign of surgery reduced the waiting lines and the need for consultations.

In April of 2002 the program Health in the Family reached 50 million people, or one third of the Brazilian population. The program was

Life expectancy for people who are 60 years old



Men	15,74	15,82	15,9	15,98
Women	19,05	19,18	19,3	19,42
Both	17,43	17,54	17,64	17,75

Source: IBGE



Symbol of the Preventive Campaign against Aids promoted by the Brazilian government and that won international awards

focused on the more needy part of the population. The program is carried out through the basic health-care units that are capable of resolving nine out of ten health problems found in every community. Teams containing at least one doctor, a nurse, an assistant nurse and five or six members of community groups perform the work. Through this qualitative assistance, illnesses can be pre-determined and unnecessary internments are avoided. It also contributes to an improvement of the quality of life of the community at large. Each team is capable of attending to, on average, 3,500 people with follow-up services. In 1994 there were 328 teams whereas by 2002 this quantity had grown to more than 15 thousand teams looking after the health problems of the needy.

An important differential of this program lies exactly in the emphasis given to actions for prevention and prior diagnosis of illness by treating and accompanying all the members of one family and includes treating them in their own homes. This is a way of strengthening the bond between the people rendering the service and those receiving it. Apart from this, when the work is carried out based on indications

provided by the community itself it has a far greater chance of success.

These links are strengthened even more because people choose the representatives of the community groups from the community itself who, therefore, are familiar with the customs and culture of each place. In this way they contribute value to local questions apart from encouraging greater popular participation in the execution of public policies. On visiting the interior of Brazil and the outskirts of the large cities, which is something I have been doing on a regular monthly basis for the last five years, I can vouch for the improvements.

Naturally, on the outskirts of large cities like São Paulo, Rio de Janeiro, Recife or Belo Horizonte, it is easy to find social disparities and grave difficulties encountered by the population in their normal daily lives. Even so, the positive ratings are worthy of note and can be seen in the suburbs of large cities such as Porto Alegre and Salvador, to give just two examples of cities governed by parties from different political camps, (Porto Alegre by a left wing party and Salvador by the right). The

AIDS IN BRAZIL

(Before and after)

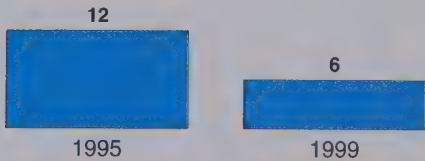
LESS CASES

Cases per 100 thousand



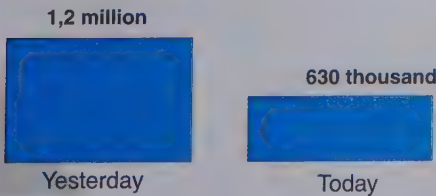
LESS DEATHS

Number of deaths per 100 thousand



THE PROJECTION THAT DID NOT HAPPEN

Aids cases



MORE PRESERVATIVES

Preservatives purchased by the government



Source: Orientation to the National Congress

combination of political determination and the existence of funding together with well intentioned public programs have brought results that have benefited the neediest part of the population. In regards to this last item it should also be mentioned that the convergence of interests on the Federal, State and Municipal levels has been of fundamental importance for achieving these positive results. The importance of this convergence lies not only in the fundamental good sense that it stemmed from. It happens to be a rarity in a country like ours where, often, the governing bodies interrupt works or programs simply because they, or their protégées, were not responsible for forwarding them or they were forwarded by the opposition. In other words Brazil is starting to lose its short sightedness and is working towards resolving its problems

Health, illness, and prevention of disease all have a lot to do with basic sanitation and hygiene. In other words, dirty water, a polluted environment, and garbage contribute to illness and death. Over the last decade Brazil has also woken up to these problems and decided to try to resolve them once and for all. The Ministry of Health itself took on the job of making investments in basic sanitation, especially in the poorer neighborhoods of towns with a population up to 30,000.

Brazil's efficiency in combating AIDS is recognized all over the world and serves as a model of a successful operation for the prevention, control and assistance to people afflicted by the HIV virus. Some of the results are as follows:

- The Health Ministry managed to control the speed with which the disease was spreading in Brazil and, today, it has only one half of the cases that were projected by the United Nations for the year 2000.

- Starting in 1996, the indices of AIDS cases stabilized at 14.5 per 100,000 inhabitants. At the end of the nineties a decline in the illness was evident. Between 1999 and 2000 the incidence of 12.5% per 100,000 dropped to 10.5%.

- Between 1995 and 1999 the number of deaths due to Aids dropped from 12 per 100,000

inhabitants to 6 per 100,000 inhabitants.

- The Brazilian model for combating the disease also allowed for a considerable improvement in the life-style of the person who had contracted HIV/AIDS. The cost of treatment was reduced by 48% and, whilst in 1996 there were an average of 1.7 internments per patient, in 2001 this number had dropped to 0.3%, which meant a reduction of 82%.

- The need for more complicated internments was also reduced. Between 1996 and 2001 the occurrence of tuberculosis in Aids patients was reduced by 65%.

- The Ministry of Health's prevention campaigns have an educational value that is extremely important in changing the public's behavior. The use of preservatives rose to 48% in 1999 compared to 5% in the middle of the eighties. Brazilians are adopting preventive measures against contracting HIV on an ever-increasing scale.

- About 200 million preservatives were purchased by the Ministry of Health for distribution in 2001. This is more than ten times the quantity acquired in 1994.

- To carry out the exams and assistance to bearers of HIV/AIDS 74 hospitals/day were implanted; 54 therapeutic home consultations were instituted together with 700 services of specialized assistance apart from the appointment of 375 conventional hospitals between March 1994 and 2001.

- Brazil is the only developing nation to offer such dedicated support to Aids victims: about 115 thousand patients receive the benefit of free distribution of the latest in anti/retrovirus medicine through the public health system.

- Thanks to this firm stand and its international repercussion the Health Ministry managed to lower the prices of the drugs dispensed to HIV bearers. Between 1997 and 2001 the reduction in the price of the medicine was in the order of 48%. In Brazil the annual treatment with anti-retrovirus costs on average \$2.5 thousand per year whereas in Europe and the United States this number is close to \$10 thousand. This reduction was made possible

as a result of intensive intervention with the international bodies to break the patent laws and allow the introduction of generic drugs in the Brazilian market.

- Due to pre-natal assistance, health-care during birth and support to the newborn that includes the offer of anti-retrovirus medicine the transmission of birth related HIV was reduced by 48% between 1998 and 2000.

- As from the publishing of the Law governing Transplants and its sanctioning in 1997 the Ministry of Health started an intense campaign to establish the National System for Transplants by organizing lists of receivers and creating State centers for transplants thereby reducing the waiting list for vital organs.

As a result of organizing the activity of transplants, of the increase in funding that became available, and the purchase of drugs for the receptors, there was a large increase in the number of transplants. Here are the percentages of the increases in transplants carried out by the SUS.

- the number of kidney transplants grew by 69,84%;
- the number of cornea transplants grew by 80.76%;
- the number of heart transplants grew by 80,36%;
- the number of bone marrow transplants grew by 99,15%;
- the number of liver transplants grew by 168,05%;
- the number of pancreas transplants grew by 175%;
- the number of lung transplants grew by 1.600%.

Brazilians are basically a generous people by nature. They demand little and are known for their positive response when their government asks them to make a contribution. The most recent example of this is the widespread use of generic drugs. For ten years the project of legalizing these substances was stuck in the National Congress. A powerful lobby did what it could to impede the approval of this legislation that was created to reduce the high costs the population was paying for medication.

Finally, in 1999, generic drugs were sanctioned and protected by law. And from then on they have continued to grow their participation in the market both in the amount of different varieties and also in their consumption. In May of 2002 Brazilian consumers could find 426 types of generic products available in their local drugstores at prices that on average are 40% cheaper than brand names and with the same, or even better, guarantees of efficiency. By the end of this year there will be another 700 generic drugs on the shelves. The consumption that represented nine percent at the beginning of the year should reach 20% by the end of the year and 30% in 2003. This is a growth rate that is twice the one observed in the United States or Europe.

Non-governmental surveys indicate that generics have provoked drastic reductions in the costs for treating illnesses such as hypertension, diabetes, and cholesterol. Somebody who spent R\$1500, in May 2000 for a year of treatment for hypertension would be spending \$590 in 2001 using the generics "maleato" and "enalapril". The same sources indicate that 95% of Brazilians are aware of generic drugs and that 48% request them in the drug stores. This represents an excellent response to the government's initiative on the part of the public.

The generics, the popular drugs and the mixtures to combat Aids consecrate, worldwide, Brazil's theory that public health is more important than the commercial interests of the large laboratories that own the patents. The Brazilian theory went beyond its own frontiers and was approved in 2001 during a meeting of the World Commercial Organization held in Doha, Qatar.

Generic drugs were responsible, at least indirectly, for transformations that occurred in the Brazilian pharmaceutical industry. This came about because foreign and local laboratories were obliged to re-think their policies and re-define their business strategies for production and sales. For local industries with a vision of the future the new market represented an alternative because they were

almost totally suffocated by the big international brand names. After getting over their initial shock the multinationals came to terms with the fact that generic drugs were here to stay and they now understand that the current and future growth of market share depends on investment in these new products.

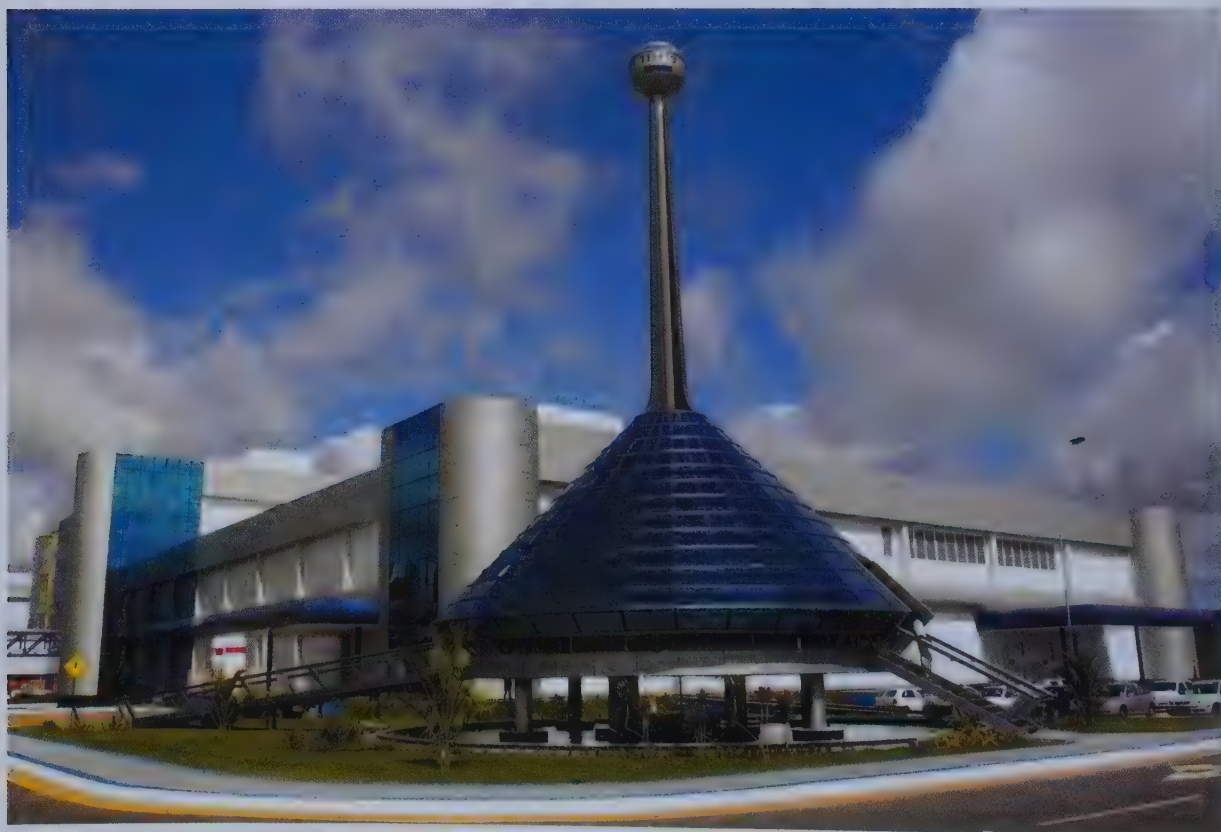
There are some cases that can be used as an example. One of the main ones is the pharmaceutical-chemical nucleus of Anápolis which is the second largest city in the State of Goiás and previously only known as the headquarters of the Brazilian Air Force base for Mirage jet-fighters and its agricultural and bucolic vocation.

The legalization of generics affected the drug industries in various States in Brazil such as Sao Paulo, Rio de Janeiro, Minas Gerais, Pernambuco and Ceara amongst others. All of these, however, had already gained a certain amount of industrial experience previously. What draws our attention is the case of the State of Goiás where, in 2000, the State government created the Program for the

Support and Technological Development of the Goiás Pharmaceutical Industry. The private sector responded promptly and, the same year, it invested 300 million reais to expand the production capacity of laboratories such as Vitapan, Teuto Brasileiro, Greenpharma and Neoquímica. A further 10 million reais were spent on the infrastructure of the cluster.

The largest company is Teuto. In April of 2002 it started up an export drive by signing sales contracts in the order of \$2.2 million with South Korea and Costa Rica. These contracts include, apart from generic drugs, medicinal compounds for treating Aids and antibiotics. Looking ahead, other countries in Africa and Latin America are targeted in the company's plans for export and it hopes to close \$15 million of contracts by the end of this year.

With a production capacity of 360 million units per year this new industry has on its books five of the ten ante-retrovirus ingredients of the cocktail against Aids, medicine to combat malaria and other sporadic illnesses that are very common in African countries. Recently a



Teuto laboratory, the largest in the production of generic medicines in all Latin America, located in Anápolis(GO).

delegation from the Ivory Coast visited Teuto and the pharmaceutical nucleus in Goiás. Around ten percent of that country's population of 16 million inhabitants is infected with the HIV virus.

The growth in the number of pharmaceutical industries in Goiás, principally caused by the migration of companies to the cluster in Anápolis, has professionalized and helped grow the participation of drug distributors in this region and across the country. In June of 2002 there were 90 companies distributing medicine produced in Anápolis to Brazilian drugstores. The cluster currently produces 90 million doses per month and of these Teuto and Neoquímica are responsible for 20 million units.

With the growing need for cargo facilities some of these distributors are opting for strategies that are common in the São Paulo-Rio de Janeiro axis. They have formed partnerships with distributors in other States. One example is the association of the São Paulo Company Farmais and the Goiás Panarelo company who believe that the good results they have obtained are a result of their widespread and capillary distribution system. Panarelo is one of the three largest drug distributors in Brazil together with Santa Cruz and Farmed.

The majority of distributors in Goiás, however, opted for specialization. For example, the Norte Sul Medicamentos company, headquartered in Anápolis, has been in business for 16 years and has signed an exclusive contract with Teuto. Prior to this the company rendered its services to 104 laboratories in São Paulo, Goiás and the South of the country. "Working for just one laboratory does not mean we have lost revenue. We reduced costs and improved service because the logistics involved in exclusive distribution are more agile compared to coordinating a greater number of supply bases," says the owner Lucineia Dias.

The case of the generics speaks for itself but it was the second important event to rock the Brazilian pharmaceutical market in the last decade of the XX century. The first involved the public laboratories and was based on

reinforcing the production lines of State companies that were already operating in this sector with their production focused on lowering the prices of medicine, especially those meant for chronically ill patients.

The first fact to shake the Brazilian pharmaceutical market in the last decade involved the public laboratories especially the ongoing State experiments. The best example of this situation comes from the Northeast where Lafepe, the Pharmaceutical Laboratory of Pernambuco has an interesting success story to recount.

Producing liquid and solid medicine in a modern infrastructure Lafepe closed last year with R\$60 million of revenue. In the ranking it is the second public laboratory in Brazil, (the first is Furp in São Paulo), and can be found in 18 States supplying medicine to 13 capital cities and 419 municipalities. At the beginning of 1999 the State company's debt was R\$37 million but an agreement with the government reduced this amount by 70% opening the way to close off the year with profits of R\$4.3



"Generic" medicines have invaded the shelves of the Brazilian drugstores. The competition forced down the prices of brand products.



The Recife headquarters of Lapefe, a good example of a state laboratory for the production of generics

million, a number that has increased continually over the last three years.

The State Secretary for Health, Guilherme Robalinho, reports that the payment of the debt and the partnership with the government were fundamental for Lapefe to be able to take a large step forward in terms of quality and diversify its production of cheap medicine for the poorer segment of the population and also more complex drugs for people more seriously afflicted. The Health Ministry is currently the largest customer of the Pernambuco laboratory purchasing more than 40% of its production.

The public laboratories tripled their production of medicine for the lower income groups over the last four years. More than 40% of their consumers can be found in families that have an income below three minimum salaries.

The Unified Health Service (SUS) was created by the 1988 Constitution. Article 196 states that "health-care is a common right and is a duty of the State that will be guaranteed

by way of social and economical policies that will attempt to reduce the risk of illness or other aggravating factors and it guarantees universal and equal access to the actions and services needed for its implementation, protection, and recuperation". Starting from here the social protection system took on the following characteristics:

- Universality - all Brazilian citizens, whether they be part of a health scheme or not have the right to health care.
- Equality - in regards to access and the form of participating in the costs.
- Uniformity and Equality - between benefits and services.
- Non-negotiability - the amount of the benefit is not negotiable and cannot be less than one minimum salary, and any readjustment should coincide with the readjustment of the minimum salary of workers in active employment.
- Diversity - in regards to funding. previously, employees calculated their contributions based on their pay-chits. The new

Constitutional text changed things by including revenue and profit in the calculation of the contribution, and;

- De-centralization - administrative management was de-centralized and became a responsibility of the States, Municipalities and Communities.

This decentralization was, perhaps, one of the most effective measures taken by the SUS apart from providing funding, of course. Since 1998, the federal government has been adopting a number of measures aimed at decentralizing its overall health program. One of these measures was the implementation of the Minimum Limit for Basic Attendance, which was a fixed value, and served for the up-front financing of activities devoted to basic attendance in accordance with the amount of the population that needed this attention. This is based on the pass-through of per capita funding instead of payment of work after the fact.

This was one of the ways found to avoid the constant delays in payments to private, public and university hospitals. This question has to be recognized as a serious smear on the national scenario with its inherent problems related to attendance in the hospitals, principally those in

the poorer areas that were threatening to go on strike, started to find its way out of the morass. This took place in 1997. Today, according to collaborators in the Health Ministry the SUS has gone more than four years without being late in payments to hospitals.

What was also noted was a considerable increase in funding transfers from the federal sphere to those of the states and municipalities. In the same way, and at the same time, we witnessed an expressive transfer of responsibilities, resources and attributions with thousands of municipalities being listed as being agents of the SUS.

The Heart Institute of the Hospital das Clínicas, that belongs to the Medical Faculty of the University of Sao Paulo, (Incor-HCFMUSP) is one of the world's best equipped hospitals specialized in the clinical and surgical treatment of cardiac-related problems. The Incor programs are carried out through on the spot facilities installed in 31.500 square meters of modern buildings and they also count on the support of the Auxiliary Hospital of Cotoxo, the Auxiliary Hospital of Suzano and the Hospital Sepeco.

The clinical staff at Incor is made up of a



Ex-minister Adib Jatene, general director of the Hospital do Coração (Heart Hospital), which operates a diagnosis system that can be accessed from anywhere in the world.



The Instituto do Coração (Heart Institute), in São Paulo, is a world reference center in the treatment of heart diseases.

group of professionals versed in the disciplines of cardiology and thorax surgery, educated at the Medicine Faculty of the University of São Paulo and by Doctors at the Clínicas Hospital that is also a part of the FMUSP, and can boast state of the art medical equipment.

Incor's medical services are considered to be of an international level and it offers services in cardiology to the community. 82% of the patients come from the SUS program, 15% are bearers of health care insurance and 3% are private patients. Incor maintains its teams of professionals constantly up to date by way of an intensive course that is carried out together with an exchange program with similar international institutions, participation in congresses, symposiums, and round table meetings, apart from an ample access to national and international scientific publications. Incor, apart from this, still carries out an active role, denominated ENSINO, that is directed towards students in their 3rd, 4th, and 6th years of Medical School at the Sao

Paulo University. It offers lodging to future doctors in the clinical cardiovascular, pediatrician cardiovascular, and heart surgery areas apart from, and this is quite recent, to nurses, psychologists, and social assistants as well as courses in nuclear medicine, non-invasive diagnostic methods, intensive therapy, pathological anatomy and homeopathic dynamics. Each year more than 300 courses are held to fine-tune these professionals.

Incor is one of the few Brazilian hospitals that has achieved levels of excellence that can be compared with similar first class institutions around the world. This high level of quality is a result of the model that was introduced twenty years ago by its association with the E.J. Zerbini Foundation.

Diagnosing or attending to health problems is what health care is all about. To think of these activities as "businesses" can lead to a certain amount of confusion. A basically Catholic country, Brazil tends to defend the idea, at least at first, that someone is usually making money or profits from something connected to public health. The unraveling of this myth is closely linked to modern history when we talk about hospitals and other units that render first aid services.

If we have to define modern times let's consider the last two decades of the last century and the first of this one. Before this, it is fitting to mention something from Brazilian history: the background in terms of hospitals used to be somewhat confused with the Santa Misericórdia Hospitals that were philanthropic institutions created in Portugal by Queen Leonor, wife of Dom Joao II.

These appeared with the objective of giving medical care to the poor, orphans, prisoners and other unfortunate beings. At that time, a person who had money could summon a physician to his house and the necessary treatment was carried out. This was when the words faith, hope and charity became a part of our vocabulary. Together with these words came the concepts that they embrace, the molding of society's psyche against the idea of company profit when it comes to matters that

concern public health. For better or for worse there are people who identify with these three words the fact that until this day we, as a nation, are contrary to paying for these types of medical services.

What also contributes to this concern is the fact that there is a lack of professional conduct in carrying out these services with, for example, medical errors that cause irreparable damages and a certain disdain when dealing with patients or family members. What can be added to this is the well-known and chronic governmental disorganization when it comes to paying the bill. The first part of the problems is not the most serious because the hospital service has improved a lot over the last few years. And it has to be said that on the government side things are improving with autonomy in the health system doing its part, principally by paying its bills when they come due.

The private hospitals that are working for profit appeared in the medical scenario as successors to the private clinics. Normally a group of doctors would get together and start an enterprise in order to complement their medical subsistence and make some sort of profit. In the private profit-making institutions a certain culture developed that considered clinical or surgical qualities for certain professions as being paramount in the choice of hospital management personnel.

A good part of the time this proved to be a mistake and sometimes it was a fatal mistake for hospitals. Competence or excellence in terms of clinical or surgical treatment is not, from square one, a synonymy or a pre-requisite for competence or managerial capacity. This picture is also changing together with the constant and successive initiatives to improve management in this area. The Brazilian hospital sector, therefore, is trying to survive as a business. It is not uncommon to find, even in large hospitals, recording processes based on the principle of "lets balance the books", meaning that revenue and outgoings are set off. In a negative cash flow situation the solution is to sell more services and get to the post by beating costs. A good number of hospital

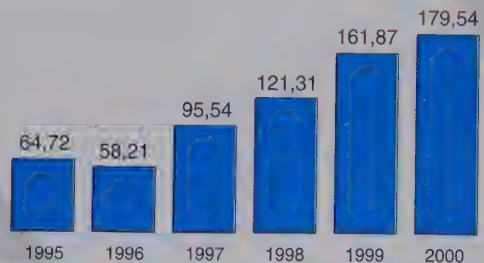
administrators are ignorant of the costs they are responsible for as well as not knowing how to combat losses and how to effectively use resources. Private business in the health sector, however, is making its presence felt and represents more than five percent of the GNP. This means investments of more than R\$50 billion in a universe of investments that total more than a R\$1 trillion.

On the contrary to the health plans offered by Medical Groups or Medical Cooperatives the health-insurance format is responsible for paying directly to the professionals and hospital organizations that are signed up members of the scheme that rendered service to the insured individual, or for cash reimbursement against presentation of the hospital bills. In 1996, and 1997, the health-plan sector was the second largest item in the insurance industry with a total of 21.61% (compared to 19.98% in 1996). It was evident that this was the sector that grew the fastest over recent years in accordance with statistics supplied by the Superintendence for Private Insurance Susep): 31.70%, (36% according to data published by Conjuntura Economica of the Getúlio Vargas Foundation and the Brazilian Economy Institute). During the first half of 1998 total revenues in the Brazilian insurance market amounted to R\$9.5 billion in insurance premiums compared to R\$9.2 billion in 1997 and with its participation of R\$2.15 billion health insurance (22%) came in second place to car insurance (R\$3.23 billion and 34%).

The revenue of the insurance companies in 1997 came to about R\$4 billion at an average

Number of vaccinations applied throughout the country.....

millions of doses



Source: Ministry of Health

annual price of R\$755 and average cost of R\$566. The number of people insured reached 5.3 million.

Just three of the largest insurance companies - Sul América, Bradesco and Golden Cross - answered for 74.23% of the premiums which indicates a high concentration of business in this sector.

Between 1996 and 1997 the total of medical consultations rose from 46.6 million to 54.34 million representing an increase of 18.62%. Services rendered by hospitals present the highest growth indexes: clinical internments 25.24% (from 210 thousand to 263 thousand over the period) and surgical internments 23.71% (from 350 thousand to 433 thousand). The per capita use of health insurance during the period increased from 9.84 consultations per insured person to 10.44 consultations per insured person, an increase of 6.8%. In 1997 the insurance companies paid out R\$2.21 billion whilst paying for 55.34 million consultations. This represented an increase of 54.82% compared to the numbers for 1996 (from R\$1.43 billion for 46.6 million consultations) and at the same time the total number of consultations grew by 18.62%.

The sector of Supplementary Health has been growing steadily over the past 40 years although it has grown at a much faster rate since the eighties. Until 1999 it was functioning as a non-regulated sector.

When the SUS system was created as a universal, self-sufficient and free entity, the Constitution of 1988 also defined the principles for private activities in the

Supplementary Health sector placing it under rigid control by the State. Although talks about the regulation of Supplementary Health started soon after the sanctioning of the Constitution they passed through a number of modifications until the year of 1999.

The creation of the National Agency for Supplementary Health (ANS), that is responsible for regulations, established a system that it believes to be long lasting by way of a Provisional Measure signed on the 25th of November 1999 and passed into law on the 28th of January 2000. Linked to the Ministry of Health the Agency maintains the concept of regulating the Supplementary Health system in the Health sector. But the fact that it is a Regulatory Body gives it more leeway: administrative, financial and political autonomy that are bolstered by its own earnings, decisions taken by a Collegiate Directory, directors with mandates that are defined by law and, lastly, legality when it comes to carrying out its determinations.

The start-up of the Agency's activities in 2000 clearly proved the advantages of this new model. The ANS started to immediately organize and catalogue the existing information and draw up systems for new information. There was an increase in the quantity and quality of the information and therefore an improvement in knowledge about the sector. An example of this is a list of users that in 1999 didn't reach 12 million and today holds more than 34 million.

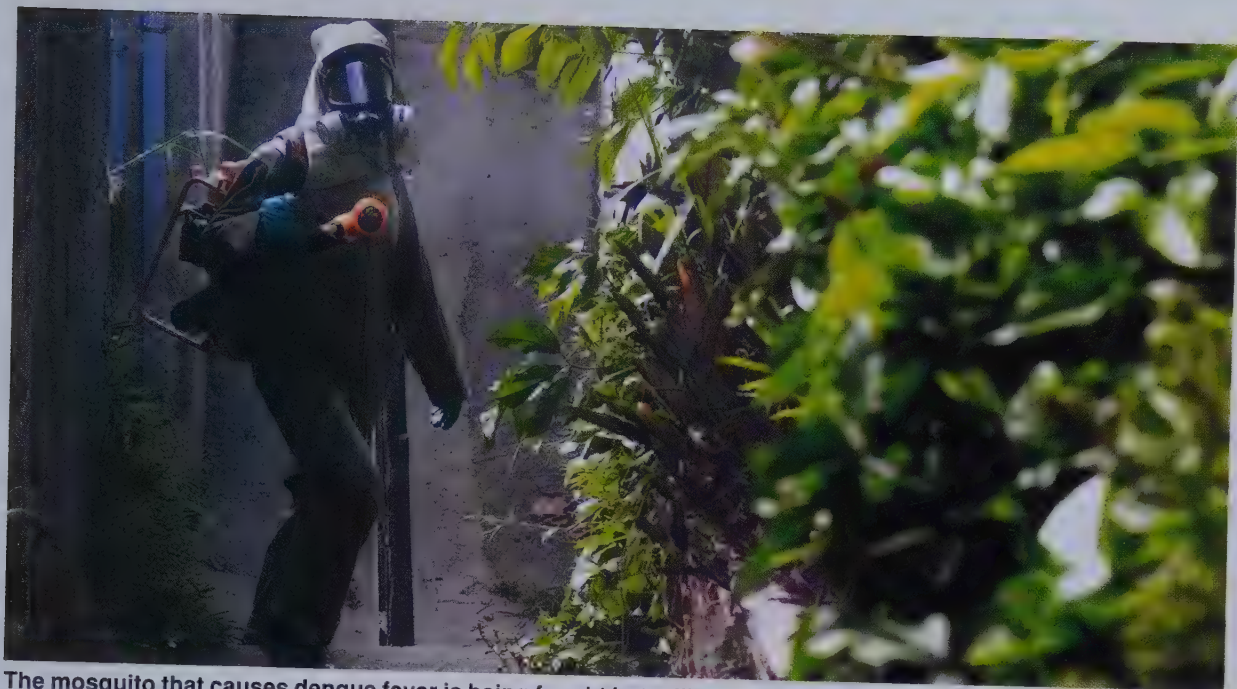
The sanctioning of the Provisional Measure into law was strategic for the Agency since it determines the primary objectives in all official documents. The ANS believes that the Provisional Measure answers the demands for stability in the legislation and the regulatory process. These are key factors towards efficiency in the regulated sector and are fundamental for the adoption of clear regulations that translate into equilibrium and stability.

An important point: the legislation permits the participation of foreign capital in the sector of supplementary healthcare. All of the economic/financial ground rules have been outlined by ANS and these include investments of R\$5 billion over the next five years. The agents

Number of doctors per 1000 inhabitants

Region	1997	1998	1999	2000
Brazil	1,35	1,34	1,44	1,94
North	0,61	0,56	0,63	1,02
Northeast	0,8	0,81	0,82	1,13
Southeast	1,86	1,83	2,05	2,62
South	1,36	1,34	1,37	1,84
Midwest	1,22	1,27	1,27	2,23

Source: Ministry of Health



The mosquito that causes dengue fever is being fought but still poses a problem.

were classified in accordance with their segments: insurance companies specialized in health, cooperatives, medical groups, and administrators. It is a fact that there are 2,428 operators registered with the Agency who are responsible for more than 34 million people. The health-plan operators have to reimburse SUS for the medical procedures that, for one reason or another, they failed to carry out.

The amounts for medical treatment are established by the Sole National Table for the Equivalence of Treatment (TUNEP) and arise from the average of the values practiced by the operators of the health plans. The operators are supposed to pay their bills within 15 days from the issuing of the invoice.

Under the current legislation the guarantee for the bearer of a health plan, be it individual or as a part of a group, and acquired before January of 1999 is assured and in force. The consumer can carry on with his plan indefinitely. If he is satisfied with the service or if there is another reason that makes him opt to continue with the plan that was in force before the new law then he may do so without any type of restriction.

It was to be expected that a lot of polemics would surround the appearance on the scene of a body intended to regulate the other participants. It is a fact that, on starting to act in a sector that

had suffered from no State tutelage or interference and had been standing on its own feet for the last 40 years, the ANS thought that these polemics would be healthy for the sector even though at times, and inevitably, differences of opinion would wind up in Court.

It is also a fact that some people are in favor of more regulations whilst others don't want any regulations at all. The search for a common denominator and for a shortlist that takes care of everybody's interest is what encourages us to press ahead. These last three years operating under Law number 9656 and with the presence of ANS for the last 20 months show that a lot of things have been achieved, but also, definitely, there is much still to be done.

Today, 21 million of the 30 million Brazilians who have health plans do not take full advantage of the provisions of the law. They live, let's say, in some kind of nebulous zone of regulations, with some kind of cover that is, on many occasions below the limits of the Referential Plan. The legislator needs to force ahead in search of transparency in this sector so that the victories of the last few years are not in vain. Profit is healthy whereas outright greed is a sickness.



A great Social Melting Pot

In this year's elections, three of the four main candidates for the office of president came from ethnic groups that were never a part of the Brazilian elite during four fifths of the history of the country. Originating from two groups of immigrants that found their way to the Southeast of Brazil at the turn of the 20th century made up of European and Asian immigrants and Brazilian migrants from the northeast of the country, we find a contender of Arab descent, one of Italian descent and one from the northern State of Pernambuco, who, in a way we can say he was born in Pernambuco but was shaped in Sao Paulo. These politicians went to the polls as representatives of regional intests, basically Sao Paulo and Rio de Janeiro .

Anthony Garotinho, of Arab descent, Jose Serra, the Italian, and Luiz Inacio Lula da Silva, the Northeasterner are proof that 100 years ago discriminated minorities were finally admitted to the elite of the Brazilian society. In the case of foreign descendants, it was a long journey that took the immigrants three generations to assimilate, and can now be seen as a jump from a context of near poverty in just one generation, to one that could be a position of consummate power. None of the three is an exception but rather the rule of the inclusion of these immigrants at the top of the

social-economical ladder. This has been the rule of the game in Brazil, that of an under-developed economy that never found financing for its development as was the case of other American countries that were favored with investments.

Formed by discriminated immigrant groups, mostly expatriates from Portugal and African slaves, Brazil in its early days as a nation already demonstrated its volition to integrate these outcasts. The first consistent signs of the existence of a Brazilian nation, that was independent from the European bureaucratic and mercantile elite who held political and economic power, happened in the 17th century. In a hiatus of the metropolises' power, the Crowns of Spain, Portugal and Holland, that had siezed power in the most prosperous areas of the country, for example the Northeast where sugar-cane had become an export product, decided to re-write the rules and intervened in the political-military process of the sovereignty of the territory. It is emblematic of the times that during this struggle the first black Brazilian general, Henrique Dias, and native-born Felipe Camarao, were in charge of the troops.

Promoting what today would be named as a "war for national liberation" in its more classic manner, the first Brazilians fought alongside guerrillas against the Dutch colonizers that occupied their territory

succeeded in by expelling them from South America. Their rebellion was not exactly welcomed by Lisbon that, at the time was negotiating an alliance with Amsterdam against the government of Madrid. However, the victors had no alternative other than to realign with Portugal as in those days they did not have the military force or the diplomatic articulation to form an independent country. Thus, they opted for a symmetrical adhesion based on their strong connections with Portugal: the language, the religion and the cultural liaisons with the Lusitanian areas of Europe and Africa. At that very same time, the outcasts living in the Brazilian southeast lived a life of their own and were a result of the miscegenation between Portuguese descendents and indigenous people. They spoke the language tupi-guarani (recognized as the language of the new country) and ventured throughout the hinterlands of South America. The Bandeirantes were Portuguese pioneers who found a way of combining their own geo-policies with the powerful indigenous tribes on the high Plateau tempered by the innovations brought from Europe. Among these was a subsistence form of agriculture with new species brought by the colonizers that greatly enriched the small variety of local flora and created conditions for a true demographic explosion. There was also a need for workers in the plantations, that is to say, slaves. These slaves were also a part of the outcasts in those days.

In the same 17th century, the gold rush began with the discovery of the mines in Bahia and Minas Gerais. During these years, Brazil caused Portugal to become one of the richest nations in the world and this resulted in Lisbon abandoning its mercantile trade to concentrate its efforts on exploiting the wealth that was coming from its American colony. The Brazilian capital was transferred from Salvador, in the Northeast, to Rio de Janeiro, in the Southeast and closer to the mines, transforming the region of the beautiful Guanabara Bay into a new area of development. Thus, step-by-step, the local population started to open up the frontiers and settle the land. Its growth was exponential until a demographic explosion took control of the second phase of the settlement of the country. This was when inter-regional migration and migration from the rural areas to the urban areas occurred, a pattern



Henrique Dias, a black commander against the Dutch.

which still occurs in Brazil today.

This is where all the negative and ambiguous images of Brazil that circulate in the media originated and that have influenced national and international opinion about the distribution of wealth in the country. This demoralizes a nation that in the past seemed to have been just a step away from the arrival of industrialization, of the agricultural revolution, of education, of public health, in sum, where the seeds for development were not exploited creating unlimited social unrest. The results were negative if compared to the progress being made by other nations around the globe. More recently, what has been happening in Brazil is a long and steady process of economical and social growth, second only to Japan. The truth is that Brazil has been continuously developing since 1860, which is the year when it began to define its macro economy. Brazil's growth has, in fact, been happening gradually since the Portuguese discovered South America in the 1500's. It was a long and hard process of integration that incorporated the areas of natural vegetation and the precarious economy of the extraction of timber sent to Europe. In the majority of cases the work of the indigenous population was fundamental. This was followed by the introduction of agriculture at the hands of the European colonizers together with a large number of Africans, mostly slaves.

After this, mining and new crops followed until headlong industrialization and service economies started in the second half of the 20th century. The latter currently represents over 50% of the country's GDP.

In the first phase the European occupation of the territory resulted from the transfer of



Felipe Camarão, an indigenous chief made "Knight of the Order of Christ".

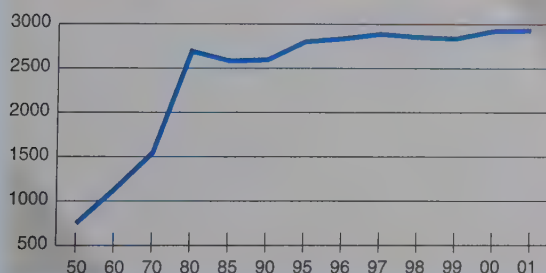
outcasts from just about all the countries in the Old World and from captured Africans. Foreign immigration, as from 1824, and internal migration towards the areas with economic growth and undiscovered wealth towards the second half of the 19th century followed.

In the great majority of cases this displacement of people resulted in new social opportunities and the results of these movements can still be seen today. Even at the beginning of the 21st century these large migrations in all directions are still occurring from the north to the south and from the south to the central-west.

This movement of masses of people that took place, and continues to do so today, happened in a disorderly fashion and generated a continuous influx of people to the urban centers. This resulted in the inequalities we find today. In the first phases of colonization from the 16th to the 17th centuries the vast majority of immigrants were European adventurers and to a lesser extent Africans who came in search of fortune together with workers from the cities, all of whom went on to form what was called the "Nation" with its economical and political elite.

At the same time, a large group of Europeans who were outcasts from society for one reason or another were forced to come to America. Many of them had been condemned in their respective legal

Evolution of the G.N.P. per capita CNP per capita (in US\$ in 2001)

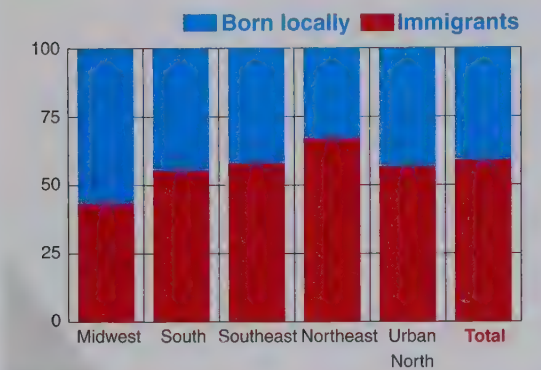


Source: IPEA

Amount of local immigration

Profile of the population
 Census 2000

	Born locally (%)	Immigrants (%)
Midwest	43,6	56,4
South	55,7	44,3
Southeast	58,3	41,7
Northeast	67,3	32,7
Urban North	57,1	42,9
Total	59,4	40,6



Source: IBGE

systems or had been coerced to come in the same way as those from Africa where the Portuguese had been active since their first incursions in the 15th century. These were slaves in their great majority, bought by traders on the Indian and Atlantic coasts of Africa, all of whom were destined to work on the plantations, in the mines or, in many cases as domestic and professional labor.

The majority of these emigrants all of whom were either captive, free, outcast or slaves were men. Only a few white and black women were brought to Brazil at this time. It was at this point that reproduction between foreign males and indigenous females started. This form of social mobility dates back to the Brazil of this period. The mestizo offspring brought up as the children of European parents reproduced with European and African females creating the mestizo race made up of a mix of Portuguese, African and indigenous blood resulting in a cumulative process where the population entirely lost its ethnic identity. The result was what would become the first wave of underprivileged people in the Brazilian society. In the way society was organized at the time, economically speaking, there was only room for nobility, slaves, workers and clerks.

The free men that resulted from this cross breeding were referred to as mulattos, mamelucos or "cafuzos" and did not have the right to belong within in the colony. However, through education, normally religious, these mestizos started to integrate and occupy a place in the economic community. Education has been the only solution for the underprivileged until this day. In the second half of the 19th century, the drought, which struck the Northeast in 1870 made these mestizos head for the large cities of the region, to the coast, or to the south where the most dynamic economic centers could be found. This movement can still be seen today and has grown exponentially following the same path. This is a story that has been repeating itself for more than 130 years: a person migrates, builds a new life, brings his family who in turn bring friends and neighbors and in this way the snowball is formed, expanding upon itself as it follows the dream of a new future and relocating millions of people, generation after generation.

In their new surroundings, even if living in the worst of conditions in the cities, these immigrants found means for survival, learned new customs, and were able to offer some sort of education to their children. At the end of three generations this mobility has produced integrated people educated by urban influences. This has been Brazil's social history. Constant change and development bodes a bright future. On the other hand, the large migratory movement does not totally match economic development. What has been noted in Brazil is that the large cities are still continuing to receive immigrants whilst, at the same time, these areas have been losing their importance in the national economy. According to research carried out by the Instituto de Pesquisa Economica Aplicada (Ipea), the metropolitan regions of Sao Paulo and Rio de Janeiro, that in 1975 accounted for 38.74% and 25.37% of the national income, have decreased in the last 25 years to 31.74% and 22.54% in 1996.

The growth rate of the population, leveraged by migration, continued throughout the 80's when the cities grew 1.8% a year and from 96 to 2002 the population increase has risen to 2.1%. "In the 80's the cities grew less than Brazil but in the next decade the situation was inverted" assures economist, Rodrigo Valente Serra from Ipea, co-author, with Thompson

Almeida Andrade, of the book "Cidades Media Brasileiras". (Medium-sized Brazilian cities)

These figures demonstrate a certain inertia within these migratory movements. At the same time the country has been encountering a strong decentralization of industry resulting in a decrease of the participation of the metropolitan regions. In the same period the birth rate fell in the big cities by 3.8% for women and 2.4% for men. Meanwhile, the number of immigrants grew between 1970 and 1990 from 50 thousand people a year to 140 thousand a year. In the 70's, in Sao Paulo, there were two immigrants for every native citizen. Currently there are four immigrants for each person born in Sao Paulo. These figures only include the immigrants with low income. In the past 50 years there have also been other types of migratory fluxes, for example that of the farmers from the South to the West and Midwest in search of new fertile land to expand their agricultural interests.

In this case the change resulted in economic development and an increase in income without causing damage to the social aspects of the country as explained in the first chapter to this book. As with the migration of the northerners, the southerners had not planned any guidelines for their migration.

The causes are the same, demographic explosion and agrarian saturation. However the fundamental difference is that the latter did not head towards the big cities but towards virgin land where new cities, already supported by a vigorous economy, sprung up in rural areas to supply the farmers.

These people are called the "gauchos" even though they don't all come from the state of Rio Grande do Sul where the name originates. Many migrated from the States of Santa Catarina and Parana. Likewise the immigrants from the Northeast are called "Nordestinos" and their origins can be found in any state of this region of Brazil.

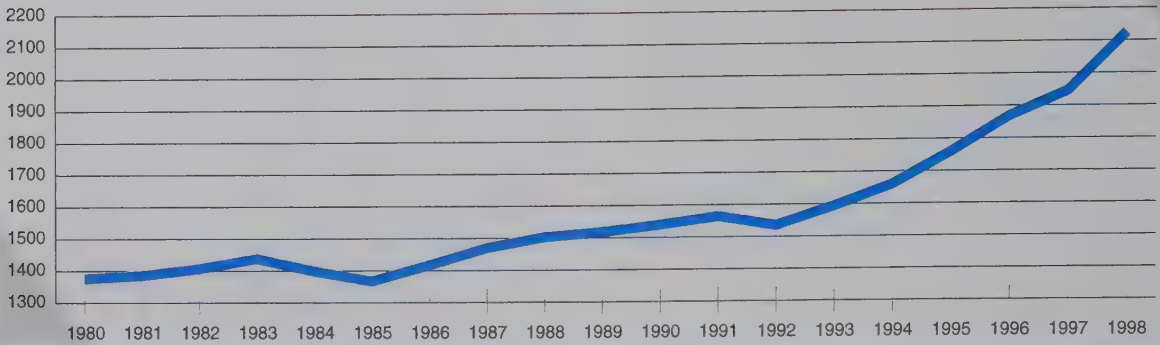
The handling of this relocation of people is not, and has never been, a part of any governmental policy. It has always happened spontaneously. The government is only concerned with these migratory populations once they have already settled in a certain area. In the "gauchos" case, the State strives to provide highways, telecommunications, financial systems and other services to support the economy. The settlements often result from projects funded by private investments. In many cases they are financed by the cooperatives formed by the farmers back home that support their associates during the migration phase, or through colonization



Harvesters during the soybean crop, a common scene that can be seen throughout all the agricultural frontiers.

Number of students in higher education

Thousands of students



Source: MEC/INEP/SEEC

companies. On the other hand, the "Nordestinos" are left to their own ends and rely on the resources available in large urban centers in an uncontrolled way. This fact that has already resulted in the collapse of public systems for education and health.

However this does seem to deter the populations who leave non-productive and over populated rural areas and where they cannot even produce a minimum for survival. The patriarchal system, which forms the labor and agriculture infrastructure, has long since surpassed its capacity to supply its contributors. Furthermore, the exports that in the past represented the strong point of the economy have lost their competitiveness to other producing regions within and outside the country due to the depletion of the land and its structural inability to adapt to new technologies

The bankrupt social system led to absolute poverty. As if this were not enough, natural disasters especially the prolonged drought exacerbated the tragedy. Even being submitted to all these tests and finding themselves in the same marginalized situation in the large cities they manage to find work in the service sectors or in industries such as civil construction where a rudimentary education and an able body suffice, and where they can find a promise for a future, progress, and survival.

The arrival of the immigrant in the big city is not necessarily dramatic or desperate. Usually they arrive with a place of abode, have family waiting for them and a circle of friends and neighbors ready to help. This is a movement that has already been taking place over several generations. They help each other with

community solidarity that has served as a buffer for the great culture shock of change. The emblematic character of the man lost in the urban jungle is more of a legend than a reality. Normally, the typical path of one of these families takes two generations. An illiterate person arrives in the big city with the family already formed and with small children. The first generation of children attend the public school system and reach the first level of elementary education leaving school to become workers in industries or to work in the service sectors in jobs such as waiters, drivers etc. In the next generation, the migrants manage to educate their children through college. This is the typical inclusion of the migrant in society. The post-war education figures in Brazil, when this migratory avalanche began, demonstrate that education is the main tool for social advancement in Brazil.

In Brazil education has always been a powerful differentiating factor. In colonial times there was only one school for higher education and it still exists today. This is the Escola de Minas de Ouro Preto that was devoted to mineral engineering at a time when there were only courses for religious vocations. Even though there are no official documents to prove that the Portuguese crown discouraged education at the time, the fact that education received no funding and was disregarded seems to point that way. The exception to this was the Vila Rica University built in the mining area because practical reasons were stronger than the lobbies that preferred to keep unwanted foreigners and technicians away from the mines. So, in this way, the

local population gained access to education without having to cross the Atlantic. They were taught by resident professors even though many still came from abroad. Argumentatively, it might have been for this reason, or not, that Vila Rica posed the most serious threat to the Portuguese crown involving figures from the political, intellectual and economic elite of Minas who carried out some pretty grotesque but rather convincing scenes like the drawing and quartering of the hero Tiradentes in the public square of what was then considered to be the most civilized city in the country and the Americas.

The Inconfidencia Mineira (the revolutionary movement against Portuguese colonialism in Brazil) was a movement promoted by well-educated men. Some were writers who had studied and lived in the only city in the country where education had been encouraged. Another two centuries went by before the first medicine and law schools were founded in Recife, Bahia and Sao Paulo. It was another 100 years before the Brazilian came of age scholastically and this was not until the second Republic and the 20th century. It was then that the universal teaching system was adopted, at least in theory, but which came down to fundamentals like building schools and investing in the human resources of the nation. It was only in the second half of this century that Brazil started to enjoy education on a popular level even though the elite, who could not see the importance of education, accepted this with reluctance. They criticized the governor of Rio Grande do Sul, Leonel Brizola, as a demagogue when, in 1956, he launched a program for basic education and literacy as a priority of his government when attention was focused on elementary school education. Today, this Brazilian politician has this program as his *obra prima* in public service and it is something he will leave as a legacy for Brazilian society.

Education, as an instrument of social advancement, is a recent phenomenon, and resulted from the imbalance created by the migrations to the large cities. Before all else learning bore fruit. It brought engineers to the mines that then went on to other mines and construction companies. During colonial times when the Portuguese crown was isolated from Europe and threatened by independence and republicans from the Old Spanish

colonies it found itself in difficulties to form an army and navy and was obliged to open military schools to train officers. After that came the doctors and lawyers and an Agronomy Faculty was opened in Pelotas, Rio Grande do Sul, at a time when beef was becoming the most lucrative commodity in the international market. However, it was only when the migrating masses appeared to be creating a certain imbalance that the state leaders realized the only peaceful solution would be to integrate and educate the cities' new children.

School in Brazil is historically associated with the clash between the heart and the mind of the people. The second phase of its diffusion with the implantation of elementary and high-schools happened soon after the proclamation of the Republic in 1889 when the catholic church saw itself threatened by a swing in political power towards positivist politicians and by an ideology that preached a secular education system that separated the church from the state. The church responded to the state schools that were being founded throughout the country with a vigorous program for the creation of schools for common folk. With its powerful influence the church brought professors and education counselors from Europe and created a previously unimaginable system providing education to the public at large and managing to build schools in the most distant areas of the country. This made it possible to attract students that were small landholders and who were basically poor and a part of society with no educational tradition.

The sons of the landowners and the growing urban middle class now had access to education administered by European professors and were taught literacy by German, French and Italian teachers who came from wherever the church could find young talent - priests and nuns - who were prepared to come to America to teach the uneducated sons of an illiterate elite. A whole infrastructure was built for the hard line boarding schools in the small and larger cities to accommodate the sons of the landowners who, until then, were barely literate and had only been taught at home by their mothers or improvised teachers. This phase saw a diaspora of education in the country but it was still not a State system for social advancement. At this time the Statesmen were still living in their

imaginary utopia but they were obliged to allow the church to take countermeasures because they had been successful in separating church and state which resulted in financial losses for the parishes and a weakening of its role in the community. This role used to be a monopoly of the Catholic Church where weddings and births were officially notarized and consequently it formed the basis for the country's civil rights.

The Brazilian population did not view education as a necessity until the start of the migrations in the 1870's. Brazil was basically a rural but non-productive country. There was only one large city, Rio de Janeiro, which represented 70% of the national GDP. Furthermore, only a few crops were planted for export and these created an incipient subtropical agriculture in the south of the country where the main income came from trading goods and African slaves. At the same time, 90% of the population lived in the rural areas in a subsistence economy with no monetary income. Although they were poor they managed to survive. Then, in 1870, came the drought in the Northeast. Thus, the miserable Northeastern population that had already exploited all the resources available on the farms and land, and who were incapable of surviving with this precarious and primitive economy, made their way to the south where a boom was leveraged by the growth of industry and investments in the service sectors in Rio de Janeiro. At the same time the coffee plantations were beginning to expand in the State of Sao Paulo and the capital city was becoming a strong commercial base due to its participation as a supplier for the huge army that fought in the Paraguayan war.

In Rio de Janeiro the migrant found a stable society where the slaves worked in most of the day-to-day activities and the freemen concentrated on their work or occupied positions in public administration or commerce. Since then the process has been steady and cumulative, fed by a demographic growth rate of 4% a year, one of the largest in the world since the beginning of the 30's. From the very start, when they left the rural areas and arrived in the cities, they found it difficult to adapt to urban society. Squeezed by the slaves on one side and the free professionals on the other, they did not have a lot of options as to where to

work in the urban centers. A lack of employment has been these migrants' fate since they first arrived in the cities. Education was the only way for social advancement. The migrants noticed this by observing the free sons of the slaves most of whom had been educated by the families of their previous owners and who could now aspire to posts and jobs in trade and the administration.

Up until this point education was not envisioned as a solution for bringing up children. There are plenty of stories where the smart bumpkin is better off than the educated doctor. The situation in the countryside with its stagnant agriculture was too much for those in rural areas to bear. When they arrived in the city and found themselves surrounded by educated people they realized that this was the only solution to advance on a social level. From this point onwards educating their children became a vital aspiration for the growing masses that continued to flood into the urban centers. From 1940 onwards, and at the hands of minister Gustavo Capanema Brazil initiated its national education program by looking to education as a way to integrate the excluded masses. Capanema's educational project is still the backbone for the Brazilian education system today. Basically each level of the federation would be responsible for a phase in the cycle; the region would supply the elementary school, the state the high schools and the Union the colleges. The private schools had a guaranteed participation at any level provided that their courses followed basic curriculum standards.

And it was in this way that the second phase of education in Brazil began through its association with the development of ideals that were the roots of the Revolution in the 30's. The objective was to form all types of professionals to contribute to the country's economic growth. In the second Empire, and in the old status quo, education was intended to provide leaders for the country. The new regime wanted to create technicians and workers. Apart from the elementary, high school and university levels, professional schools also sprung up thanks to the strong participation of industry in funding basic education by forming the Serviço Nacional de Aprendizado Industrial, SENAI created by Roberto Simonsen, and which was shortly followed by another one centering on trade, SENAC. The

Catholic Church did not waste any time and shortly after introduced the Pontifícia Universidade Católica (Catholic University), which, as the name suggests, had the blessing of the Vatican. Other religious oriented educational systems, such as the Methodists, also set up their teaching processes.

At the end of the 1960's education suffered another conceptual change. Influenced by the Ministry of Education, Tarso Dutra, a politician educated by the Jesuit Mission, introduced the concept of learning as a way to improve the overall level of education in the only region of the country that practiced popular education during the 17th century

The government then started to grant permits for teaching and to recognize diplomas from universities all over Brazil. The higher education courses that were previously restricted to the capitals and other large cities started to spread throughout the country. A city that could congregate a minimum number of professionals with a degree was allowed to open its own university. Largely criticized by the academic contingent and also by the corporations, especially those in the Human Resources Sector, the concept was introduced to the point where Brazil today has 2.7 million students registered in schools for higher education. Of these, 1.8 million will go on to private universities, 483 thousand to federal universities and 72 thousand to regional ones. In other words, the higher education offered by the state only caters for a half of the country's demand. The best example of this anomaly can be seen in the number of universities available. Compared to a total of 61 federal universities, another 61 state that are state-run, and 54 municipal ones, there are 1,004 private institutions.

There was also an increase in opportunities in intermediary school. The most impressive figure issued in the School Census by the Ministry of Education shows that the majority of students who finish their elementary education - meaning elementary, intermediary and secondary education - "are students from evening courses, in other words,

most probably people who work during the day". This is a tremendous effort for a population that is still struggling to survive and it shows the following figures: the majority of students abandoning courses are those that study in the evening and this amounts to 72.3%. Plus another 1.1 million leave the day courses. In total, 1.8 million students concluded their university courses last year. In the whole country, 8.3 million youngsters receive higher education and 35 million are registered with the elementary and high school education authorities. Technically, as the illiteracy rate falls from 17% to 9%, there is no shortage of elementary and high-schools in Brazil.

There is no doubt that the strategy was planned for a period of transition. The results have been largely criticized not only in Brazil but also internationally. A recent study by the World Bank shows that, in Brazil, the result of education is a

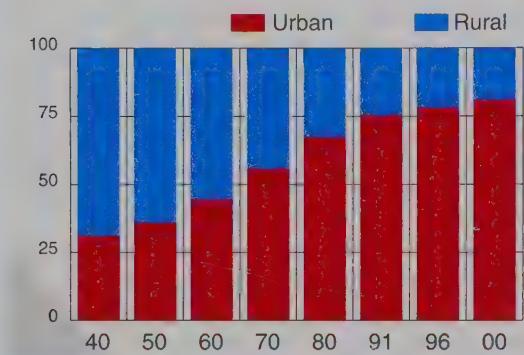


Children who study in one of the schools maintained by the Bradesco Foundation that caters to more than 100 thousand students all over Brazil

portrait of the distribution of wealth in the country because those who graduated from higher income backgrounds manage to make salaries 74% higher than those who graduated from the poorer sections. More in-depth statistics show that the profile of academic attendance tends to improve in quality and scale. The public schools account for more than 60% of Brazilian students who go on to universities with the exception of the Medical schools (76.7% come from private schools) and law (49.7%). The

Distribution of the population

	Total number of inhabitants	Urban (%)	Rural (%)
1940	41.236.315	31,24	68,76
1950	51.944.397	36,16	63,84
1960	70.070.457	44,67	55,33
1970	93.139.037	55,92	44,08
1980	119.002.706	67,59	32,41
1991	146.825.475	75,59	24,41
1996	157.070.163	78,36	21,64
2000	169.799.170	81,25	18,75



Source:IBGE

majority of students have reached a higher level of education than that reached by their parents, whereas 50% of these students are the children of parents who only managed to conclude elementary school. The Medical Universities are an exception. Here we find 63.2% of students are the children of parents with higher education. Also, those with the largest number of children in universities are middle-income families (between R\$541 and 1.800 a month). With all the caution that has to be taken in Brazil, a country of "mestizcos", a color profile of the students corresponds to official statistics: 68.5% are white, 23.4% are mulattos or "light skinned", 4.3% are black, 1.6% are indigenous and 1.2% are Asians. These figures prove how fast social mobility is changing in the country.

In recent years, the focus of investments in the Brazilian educational system has been emphasizing the quality of education even though the quantitative objectives have not been abandoned. The numbers are still eloquent arguments. On the other hand, qualitative evaluations like the "prova" (big exam) and the emphasis on higher qualifications like master's degrees and Phds have

been heading in this direction. This also needs some thought, as accusations of ruining the traditional universities in order to concentrate efforts on higher education courses could be the victim of a policy of specialization. This however might be a critical exaggeration of the matter at hand since the world's trend towards greater specialization cannot be ignored.

The international immigrations and local migrations from the rural areas to the cities have been characteristic of developed countries starting from the industrial revolution at the beginning of the 19th century, such as those that occurred in London, Berlin, New York and Pennsylvania. This is just to mention a few of the largest industrialized poles of the Northern Hemisphere where the urban population multiplied ten times between 1810 and 1900. 80 to 100 years later when this process of immigration and migration was already in its third generation these cities felt the heavy burden of the inequalities that resulted from these relocations of the population. One of the main problems has been violence. In London there have been armed robberies on Regent Street and Oxford Street. The Americans glorified this era by making movies about street wars between gangsters and police officers in Chicago. Nothing very different from Brazil, where police raids in shantytowns and the outskirts of Rio are shown live on national TV in the afternoons.

The drama of feeling insecure and the problem of personal security is a challenge for those in any organized state. Since the industrial era until today one of the triumphs of the middle class has been to live comfortably and enjoy their assets without having to worry about spending money on providing security for their families and belongings. Cities in developed nations have managed to provide their citizens with a certain right to live free from threats and backed up by a judicial system that works. This could be construed as more the result of development and distribution of wealth than that of public security. Brazil's political campaign this year has demonstrated the tension generated within the population due to the present levels of crime. This was well understood by the candidates for the executive and legislative offices who have promised to invest heavily in solutions

focused on more spending to reduce crime.

The election campaign of the American president Franklin Roosevelt at the beginning of the 30's is always well remembered because he promised and managed to obtain results by creating an image of the country's federal police force, the FBI, as being incorruptible and ethical. This was also the subject of a lot of movies. On the other hand it should not be forgotten that if the police has managed to subdue organized crime - the superstructure of generalized criminality - and still keeps these gangs on the defensive today, it was really the presence of the military that prevented criminal groups from taking over the streets in the past. In Brazil, as there is no military involvement on the horizon, the solution is to combine economic development with reforms and investments in the public sectors within the society. This is already a disorganized but definite reality as the private sector spends more and more to protect itself as can be seen from the statistics in Rio de Janeiro. In this city, the Federation of Commerce has found that in the last year businessmen invested some RS 3.8 billion in guaranteeing their assets whilst the Public Security Service has only spent R\$1.14 billion and the state budget only foresaw total spending of RS 3.4 billion. A large amount considering there were no concrete results for the population at large.

The widespread cost of this violence is high. According to a study by Marcos Lisboa, professor at the Getulio Vargas Foundation, the country has developed 10% less than it should have done due to a retraction of personal spending and investments motivated by the population's fear of lack of protection. According to the study carried out by the National Conference of Workers in Education the scholastic achievements of youngsters have fallen significantly in the more violent areas. Public tension

increases and is on the verge of paranoia, even though the figures obtained by the ONG Viva Rio demonstrates that criminality is decreasing in Rio de Janeiro. Nearly all types of crimes have fallen significantly since 1995, including those involving homicide, (from 8,500 to 6,000), but there is still too much violence taking place to enable the population to relax.

In order for Brazil to achieve a minimum level of national security that is accepted internationally investments and personnel are needed. Today Brazil has 345 thousand police officers. This is an average of one officer for every 360 inhabitants when the minimum should be one for every 250 inhabitants. In another important aspect of national security Brazilian prisons are in a very precarious state and the need for investments in this area is a priority. The country is third in the world in regards to overpopulated prisons and in seventh place regarding the ratio of prison officers to prisoners.

The well being of society depends on its capacity to offer people opportunities but it should not be forgotten that this is every one's prerogative and not only that of state leaders and workers. Society's coming together can only happen in a psycho-sociological manner that results from the participation of its members in solving the problems that are common to all. This is what we nowadays call citizenship. It is a cultural process that comes to life with the organized creation of pressure groups that end up influencing politics and bring to society a sense of ongoing participation. They keep their groups mobilized as a source of influence and a form of determining actions that ought to be priorities of infrastructures and most importantly the state.

Brazil is the proud owner of a strong cultural tradition in terms of this type of citizen

Rates of illiteracy

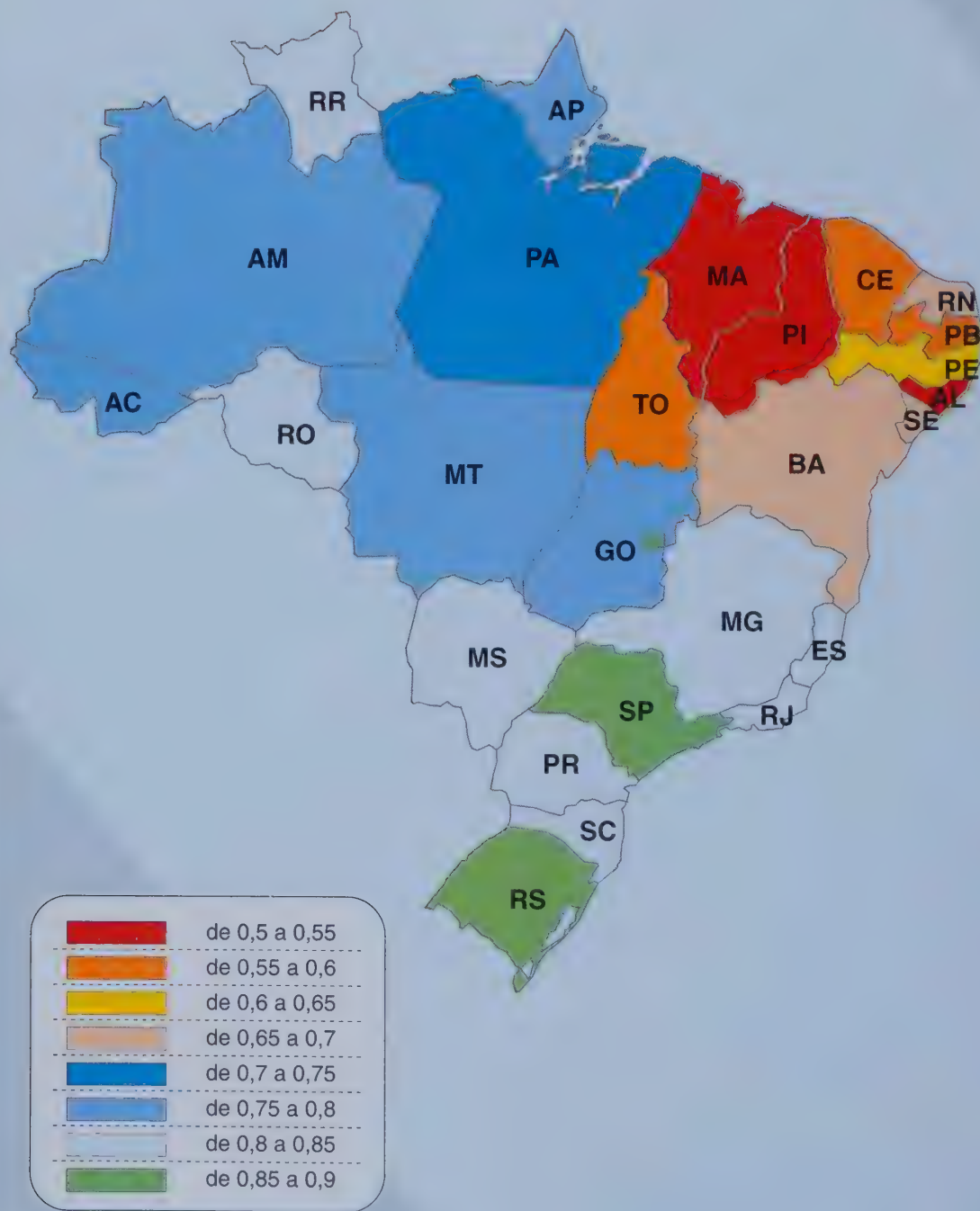
(%)

By age

Year	Overall	15 a 19	20 a 24	25 a 29	30 a 39	40 a 49	50 ou mais
1994	16	7,5	8	9,3	11,3	17,5	33,5
2000	13,6	5	6,7	8	10,2	13,9	29,4

Source: IBGE

Map of the index of human development



Source:IPEA

participation. It has been a part of national life since the creation of the Santa Casa de Misericórdia in Salvador, Bahia, in 1556. This is a non-governmental institution /organization where all the workers are volunteers and over the years has proved to be very effective. To date, 220 thousand entities can be found according to the study carried out by Instituto de Estudos da Religião, in Rio de Janeiro, coordinated by the Johns Hopkins University in the US. Out of these, 14.000 are registered with the National Council for Social Assistance and they attend to 15 million people, although this is still a small portion of the 57 million people that are living below the poverty line. They bring together 20 million volunteers, in other words more than one volunteer for every person attended to. It's a good pedestal. It is estimated that, today, Brazil companies are spending R\$ 4.5 billion in social assistance. This is more than what the federal government spends on social assistance. Some social entities are larger than many multinationals, the largest being the Pastoral da Criança inspired by the Catholic Church, which pulls together 150 thousand volunteers.

The budget of the largest one, the Associação de Pais e Amigos dos Excepcionais, (the Association of Parents and Friends of Exceptional Children), APAE, receives R\$ 200 million per year in donations. This great social effort is supported by donations from private donors, individuals and small and large businesses.

Brazil is a country that is still trying to find its way. Its citizens live in a society that offers real opportunities for social advancement maintaining a social mobility that guarantees room for development. Therefore, in the near future there is no anticipated social turmoil amongst the public at large. The policies of the State, the growing awareness on the part of corporations, and the generosity of its citizens are working towards a collective goal that will hopefully lead society through this development phase. It will rely heavily on the participation of the business community. As mentioned in the Gazeta Mercantil Forum for Business Leaders we have always thought it was our duty help make the elite of the local business community aware of macro problems and not those only related to the development of their own

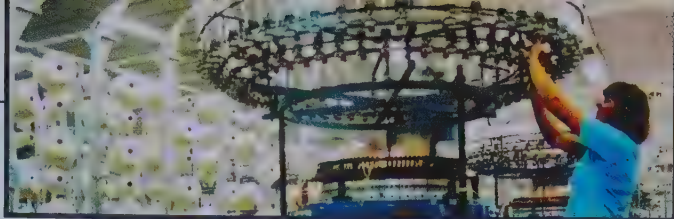
businesses. Seven years ago we started this social responsibility program with 15 companies. Today there are more than 3500 involved.

This forum now takes places in conjunction with other national entities. In the opinion of Ernesto Heizelmann, President of Embraco, from Joinville, Santa Catarina, it intends to become "the country's most representative, credible and influential forum". According to another of its members, Rodrigo Baggio, founder of CDI - Comitê para Democratização da Informática, "one of the great challenges for the third sector in Brazil is the formation and quality of our work". This is the difference that Gazeta Mercantil brings to the Forum, as explained by the President of Parceiros Voluntários, of Rio Grande do Sul, Maria Helena Johannpeter: "Are we social leaders or social administrators? As a social leader I keep asking myself whether we should be concentrating more on influencing people rather than debating the concepts of what we should be doing". This concept of the "gaucha" leader is where Gazeta Mercantil excels because as a media group it drives and formulates opinions and motivates the decision makers.

The Brazilian Social Forum, that is still internally discussing its intrinsic mission, operates on three strategic levels that were drawn up by professor Evando Neiva from the Conselho do Mérito Social. They are, "identifying the needs of society, working continuously to find and categorize social policies which are innovative, supportive, and recognizing of the dissemination of these social politics and applying them "to the right social projects of sectors II and III".

In the same manner as the Forum de Líderes Empresariais, Gazeta Mercantil will make its presence felt and will support all initiatives pursuing from the Forum de Líderes Sociais and their organizations. Today, we understand that being a communications company we are, in a way, more than a company in the pure sense of the word. We are an institution with responsibilities towards the community and we do not intend to disengage ourselves from this obligation.





The emergence of the Brazilian Woman

America is a continent that was discovered thanks to the determination of a woman. This was Isabel, Queen of Castile, on inspired by the faith and political aspirations of the Vatican, who financed the famous expedition of Christopher Columbus, in 1492. The first four centuries of terra brasilia were not exactly the paradise that was hoped for and suffering was often the lot of the majority of the people. At the beginning the adventurers were mostly men who dominated the brasilia, as the Portuguese used to call the indigenous women. These are recruited as their sexual partners to be joined later by the robust black women kept by colonial or imperial masters. To change this reality another Isabel was needed. She was a princess and the daughter of Dom Pedro II and signed the bill that set all slaves free. On May 13, 1888 a law that became known as the Golden Law was sanctioned, with its first and most important article providing for the following: "Slavery in Brazil is hereby declared banned as from the date hereof". That was when a new horizon slowly appeared, five centuries after the discovery. However, only in 1967, would the Brazilian Constitution promulgate equality between men and women by adopting the universal principle that all people are equal, without distinction of sex.

The work performed by women was undeniably an important contribution throughout history, both in the household and in agricultural work where black women and European countrywomen worked hard to raise their children, tend the family plot, and take care of primary manufacturing and the weaving of clothing. Many women in the nineteenth century went to work in the textile mills and the cassava flour factories, and there were even some who proved true heroines in the fight against invaders and in social conflicts.

Maria Quitéria de Jesus Medeiros, a girl from Bahia, relinquished her womanly ways to participate in the fight for independence. In 1822, she ran away from home, cut her hair, put on a uniform stolen from her brother-in-law, and enlisted in the artillery troops of the rebel forces.



Anita Garibaldi

"Soldier Medeiros", as she became known, showed great courage and was soon promoted to cadet, still under her false male identity. It was only at the end of the conflict and the victory of the independence fighters that her true identity was revealed. The gallantry of Maria Quitéria was honored by the Order of Cruzeiro do Sul, and she even received a medal from the hands of the emperor himself, D. Pedro I.

Another woman from Bahia, sister Joana Angélica, also became a symbol of courage in the same fight against the Portuguese. Using her prowess as the abbess of the Franciscan Convent, she sheltered the sympathizers of the cause for independence. When the Portuguese troops tried to invade the building to capture the fugitives Joana Angelica stood at the entrance preventing them from going in and vowed that they would have to pass over her dead body. They baynoted her to death at the age of 60.

Ana Maria Ribeiro da Silva abandoned her first husband, a shoemaker, to become a Garibaldi, the consort of Giuseppe, whose nickname was the "hero of the two worlds", and she fought by his side, in the Farrapos battle-a republican separatist movement that took place in Rio Grande do Sul between 1835 and 1845-and also in the Italian Unification. In Italy there are still several squares and streets baptized after her including one in Rome where there is a statue of Anita Garibaldi on horseback, as a tribute to her participation in the Gianicolo battle.

The unsung population of Brazilian women has continued to grow and today they represent 50.78%, a percentage equivalent to more than 86 million women, of whom 44% are employed in some kind of economic activity. This participation of women in the job market exceeds that of other countries in Latin America, such as Chile where 36.6% of the women are a part of the work force, or even Argentina, with a percentage of 34.4%. Even in Europe, where

The female population in Brazil

Year	Men	Women	Percentage of Women
1872	5.123.869	4.806.609	48,40
1890	7.237.932	7.095.983	49,50
1900	8.900.526	8.537.908	48,96
1920	15.443.818	15.191.787	49,59
1940	20.614.088	20.622.227	50,01
1950	25.885.001	26.059.396	50,17
1960	35.055.457	35.015.000	49,97
1970	46.331.343	46.807.694	50,26
1980	59.123.361	59.879.345	50,32
1991	72.485.122	74.340.353	50,63
1996	77.442.865	79.627.298	50,70

Percentage of women in the population



Source: IBGE



Princess Isabel who signed the Golden Bill that set the slaves free in Brazil.

theoretically the emancipation of women came earlier, the presence of women in productive activities is smaller than in Brazil. In Spain, 36.9% of women work and in Italy that percentage is 38.2%. Many Brazilian women, in addition to working, are responsible for most of the household expenses. For every four heads of family, one is a woman, especially in the cities where 91% of "female heads of families" reside.

Bringing up girls for this "new" mission at the head of their families is increasingly an educational issue. The idea that women need to study to be prepared for the job market is relatively new. At the beginning of the last century women's access to education was already being defined although

with the sole purpose of making good mothers and wives. Proof of that is a law from 1917. It was enforced in the southern state of Santa Catarina and obliged female teachers to quit their jobs as soon as they got married because it was not deemed respectable for a pregnant woman to be exposed to her pupils. This difference in the purpose of education would be mirrored in the school curriculum. Schools were separated by sex and classes were taught in a totally different way. Girls, apart from a few honorable exceptions in which the family name had an enormous influence and made the breaching of the rules easier, were only allowed to attend teacher-training courses in addition to elementary schooling, whilst boys had open doors to knowledge.

Over the course of 100 years this picture changed drastically. Women are now ahead of men in all school ratings. In the 10 to 14 age group 94.7% of girls are literate, compared to 90.9% of boys. This disparity was already seen one decade ago when 85.5% of the girls knew how to read and write compared to 79.1% of boys. At the other end of the scale of formal education 11% of young women at the age of 21 conclude university studies while only 7% of boys are granted diplomas.

The role of educator is without a doubt a woman's job. This concept already features in the first law of public education, sanctioned in 1927, the text of which states that "women need more education as they are the ones who first educate their children. It is they who influence whether people will turn out to be good or bad". Ignoring the exaggeration of putting the blame on mothers for their children's character they do have a lot of responsibility, since as a rule, when children start going to school they will also be taught by female

People responsible for the upkeep of the home

	Total	Sex		Percentage of women
		Men	Women	
Brazil	44.795.101	33.634.466	11.160.635	24,90
North	2.809.912	2.167.075	642.837	22,88
Northeast	11.401.385	8.449.390	2.951.995	25,90
Southeast	20.224.269	15.049.401	5.174.868	25,59
South	7.205.057	5.576.952	1.628.105	22,60
Midwest	3.154.478	2.391.648	762.830	24,18

Source: IBGE

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Source: IBGE

teachers, one of the most traditional of women's professions. Education was the path chosen when, for the first time, a woman became a minister of State in Brazil. In 1982, Maria Esther Figueiredo Ferraz, who had already broken with tradition in Latin America when she was appointed dean of a university, took over the Ministry of Education.

Since Maria Esther's tenure all governments, even for a short while, have had a woman as a State minister. There are several names but two stand out: Dorotea Werneck, who was Minister of Labor and then Industry, at different times and in different governments and Zelia Cardoso de Melo, who occupied the most important ministry, that of Finance which resulted from a fusion of the ministries of Internal Revenue and Planning, Industry, and Commerce during the first government to be democratically elected after 25 years of a military dictatorship. Zelia's administration was probably one of the most tumultuous in history. In her first day in office, in March 1990, she promoted a one and a half year confiscation of all bank and savings balances in excess of \$850, considering the average between the official exchange rate and that of the parallel market for the American dollar. The objective of this measure

was to control inflation that had reached the astronomical level of 70% a month in the sixty two-day period prior to the date she took office in the new government. The group of measures, that also included the adoption of a new currency and the implementation of salary and price freezing, managed to control inflation and encourage exports however it generated a serious crisis in the productive sector. When she left government, 14 months later, the average inflation was 7% a month and the commercial balance had a surplus four times higher than when she took office. Industrial production however had dropped by 12%, and the levels of unemployment had increased alarmingly. Zelia's case is particularly interesting because she climbed up the ladder of power thanks to her education and intelligence, two characteristics that allowed her to adapt to the predominantly male universe of politics. However, when she came down the same ladder she did it in the midst of a scandal that denounced her feminine side hidden behind the mask of a powerful and firm minister. She was removed from her post for neglecting power on a secondary level in exchange for a love affair. Zelia fell in love with the Justice Minister, Bernardo Cabral, who was married at the time. The fruits

People frequenting school

	Total	Literacy course	Basics	Second stage	University requisites	University	Post Graduation
Total	54.762.777	536.206	31.899.274	8 231 222	456.136	2.914.213	218.686
Men	27.250.476	231.445	16.385.140	3.750.503	175.189	1.267.176	100.241
Women	27.512.301	304.762	15.514.134	4.480.719	280.947	1.647.037	118.444
Percentage of women	50,23	56,84	48,63	54,44	61,6	56,5	54,16

Source: IBGE, Censo Demográfico 2000



Esther de Figueiredo Ferraz was the first woman to occupy the position of State Minister in Brazil.

of this forbidden passion caused here removal from the ministry. To this day, Zelia is remembered with great resentment by all those who were hurt during her short and remarkable mandate but she was, without any doubt, a woman who had influenced the country's economy and started some processes such as opening the country to imports and the privatization of state-owned corporations. These measures were upheld by subsequent ministers and governments.

The dilemma experienced by Zelia Cardoso de Melo is not rare amongst women who rise to important positions, and increasingly common feat these days. Currently, women occupy 24% of managerial positions, 19.7% of directorship positions and 13.8% of company presidencies. Furthermore, women usually ascend to power before the men. Research carried out by Catho Group, one of Brazil's major professional headhunting agencies, found that women became supervisors at the average age of 27 whilst men only achieve this position at 30. At this age women are already occupying managerial positions, which only happens to men when they are 33.

And when they reach company president, women are 40 compared to men who attain this position at the age of 43 on average.

One of the women who accumulated the most power within private enterprise is Maria Silvia Bastos Marques who, during six years, headed the operations of Companhia Siderurgica Nacional (CSN), Brazil's largest steel manufacturer with annual revenues averaging \$2.5 billion. For the first three years, she was an executive director for corporate matters, later being promoted to CEO, a position that she occupied until she left in April 2002. With a salary estimated at approximately one million dollars a year, Maria Silvia's main challenge was to adapt CSN to the ways of the free market after the company was privatized in 1993. She carried out this mission successfully and in 2000 had increased profits to the record level of \$820 million. However she couldn't maintain the company at that level and her management succumbed to the exchange devaluation, the restrictions on imported steel imposed by its major client, the United States, and differences of opinion with the main shareholder about the company's future. When she left, Maria Silvia said that nobody would believe her but she was, in fact, leaving the steel company to take care of her children. Seven months after she had started at CSN, Maria Silvia became the mother of twins and did not manage to stay away from the company even for one full month of her four-month maternity leave. Certainly the desire to experience motherhood must have cut short Maria Silvia's

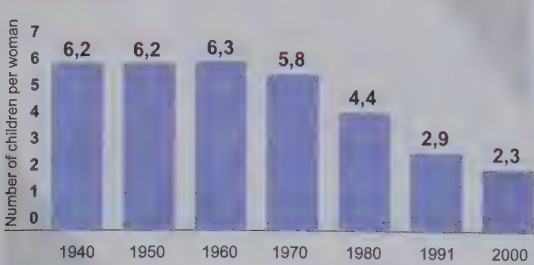


Maria Silvia Bastos Marques reached the position of CEO of Companhia Siderurgica Nacional.

fight for staying in power. Just as Zelia Cardoso de Melo allowed herself to be overcome by a love affair, Maria Silvia allowed herself to be seduced by the smile of her children when arriving home. Two successful professionals to whom the fact of being a woman could have been a determining factor for ending their careers.

Reconciling their careers with their personal lives are amongst the greatest challenges that women face at the beginning of this century. For the sake of professional success they postpone marriage and motherhood longer and longer in an ever-more calculated manner. A poll carried out at the beginning of 2002 by a consulting firm specializing in the replacement of professionals shows that mothers feel jeopardized in regards to their careers. Ninety per cent of the executives interviewed said that the 120-day maternity leave affects the running of the company and 80% of them feel obliged to cut short this period of leave due to market pressure and the fear of losing their space in the company. To manage this situation 76.7% of women use some type of contraceptive and 20.7% regularly take the contraceptive pill according to the latest research disclosed by IBGE, Brazil's governmental statistics institute. The result has been a fall in the fertility rate of Brazilian women. Currently, the average number of children for each woman is 2.3. Thirty years ago it was 5.8. The freedom to decide how many children they will have and also when they will be born is one of the main pillars on which women's independence is built. And this freedom has been used to postpone motherhood and adjust it to their careers. This "sacrifice" is still one the prices paid by women to overcome the differences and conquer positions that until not long ago were reserved exclusively to men.

Birth rate



Source: IBGE

The unconventional image of a woman putting on lipstick when she's getting ready for work no longer surprises anyone. In recent decades women have occupied positions in almost all types of activities. Sometimes in hard and unglamorous jobs such as that of Aparecida Wilma Pestana, a truck driver from Sao Bernardo do Campo (SP), who in 1985, at the age of 31 won the "Driver of the Year" award. She competed against 90 men. Others can be found in positions that require a very high level of education. This was the case of the engineer Julia Luque Faffan who, in 1982, at the age of 27, overcame the resistance of the Board of Petrobras and entered history as the first woman to work on oil drilling platforms, one of the places that until then was exclusively male territory.

As in most processes of social change, women's achievements came first in practical terms and were later admitted and formalized with the enforcement of laws. The protection of the labor market for women only happened with the Federal Constitution approved in 1998. Of the 559 representatives in charge of drawing up the new constitution, 26 were women, a modest representation of a mere 4.5%, although it was significant if compared to the Constitution of 1936, when only one seat was occupied by representative Carlota Pereira de Queiros, while the other 253 belonged to men. In this group of 26 women representatives one of them stood out: we refer to Rita Camata, elected at the age of 25, with the highest number of votes in her state, Espirito Santo. Due to her good looks she immediately got the nickname of "muse" of the House of Representatives but Rita proved to be much more than simply a pretty face, and made her presence felt in controversial issues. She voted in favor of the death penalty, abortion, the control of the financial system by the State and the nationalization of land. When she left the House she directed her efforts to the protection of children and women in the poorer tiers of society and was responsible for the extension of the maternity leave to 120 days for rural workers. Since then, Rita was reelected to the Federal House of Representatives in four consecutive elections, always maintaining her position of being the most voted politician in her state. Her most famous achievement is the law that became known as the "Camata Law", which forces



Representative Rita Camata, an Italian descendent and the first woman to be a candidate for vice president of the Republic.

the Union, States and Municipalities to restrict their payroll expenses to 60% of their tax revenues. Rita, a PMDB party member ran for the vice-presidency of the Republic on presidential candidate José Serra's ticket (PSDB).

In Brazil's elections this year, 2002, winning the female vote could be decisive. Women represent 50.8% of voters with an advantage of more than two million over the number of men. In addition to their superior numbers they show ideological independence when it is time to decide who will govern the country. According to the results of recent polls, the favorite candidates of women do not match those of men in several states. This freedom of choice, which seems so natural these days, is the result of an arduous struggle by women that started with the republican movement at the end of the nineteenth century. Brought on the winds of change that blew in the country at the time, the possibility of voting rights for women was discussed at the Constitutional convention of 1891 but was totally rejected as "a means to the end of the Brazilian family". However that defeat did not stifle the voice of the suffragettes, as the women who demanded the right to express their political opinions were known. To lend continuity to the movement several organizations were founded before the first victory was won. In 1927, the state of Rio Grande do Norte permitted and recognized women's votes. In the following year, and in the same state, a woman was elected for the first time in the history of the country: Alzira Soriano won the

election for the town hall of the city of Lages. She won but she did not take office. The Senate Commission for Administrative Power did not recognize the victory and prevented Alzira from taking office. Despite the veto, it was no longer possible to repress the reinvidications that were spreading throughout all tiers of society. Little by little other states followed the example of Rio Grande do Norte and changed their laws to allow women access to the ballot box, until a decree in 1932 by president Getulio Vargas recognized all Brazilian women as legitimate voters.

In gaining the right to vote women also conquered the right to be voted for and, as from that moment, Brazilian political history started to enjoy an increasing participation by women. In the last elections for mayor, in 2000, the most coveted position was that of mayor of Sao Paulo, the most important city in the country with the fifth largest tax income totalling some 8 billion dollars. Sixteen candidates enrolled, two of whom were women. One of the candidates, Luiza Erundina, had already been mayor of Sao Paulo between 1989 and 1992. Luiza was the first woman to govern the city known as the "Brazilian powerhouse". At the time she was everything that a candidate should not be. A woman, a spinster at the age of 54, who certainly did not stand out for her beauty, came from a very simple family and was born in one of the poorest areas of the country, the hinterlands of Paraiba. However, the idealism of her projects, plus the influence of the Labor Party (PT), together with some political incidents and her own merits transformed this humble woman from the hinterlands into the most important name in City Hall. Her administration was mainly addressed to the underprivileged and she was even accused of having abandoned the needs of the rest of the city. In the dispute of 2000, however, Luiza Erundina, who had switched to another party did not have the same support. Electors focused on another woman, Marta Suplicy, a new candidate of the same Labor Party. Both were political left wing activists, militants of the PT and became mayors of Sao Paulo. The

similarities between the life stories of Luiza and Marta end there.

Marta Suplicy the current mayor of Sao Paulo, is a beautiful and elegant woman. Born to a traditional and wealthy family she had access to good education and studied abroad. Initially she dedicated her life to research and her career in a still little-explored area, however one that is of great interest to women: sexology. Her specialty, charisma and beauty led her to television where she presented a panel on sexual education for seven years on the main women's program of the largest television network in the country. It was through the television cameras that Marta became known by the public at large. But this was also a two-way street. Through the hundreds of letters that she received weekly she became acquainted with the distant reality of women whose lives were so different from her own. The non-conformist characteristics of her personality ended up leading her to pursue a way to change that reality. Married to one of the leaders of the Labor Party, Marta used this threshold to enter the world of politics and managed to be elected federal representative in 1987. Her mandate was marked by the protection of women's rights and those of homosexuals, and she even proposed a law to regulate the marriage of people from the same sex which was not approved. Due to her performance she was considered one of the most active members of parliament during the drawing up of the Federal Constitution that is now in force. Fourteen years later, Marta took over the Sao Paulo City Hall and three months later, at the age of 56, she broke off her marriage and assumed a new romance. This attitude, as might have been

expected, earned her harsh criticism on the part of the more conservative sectors and from the sympathizers of her ex-husband. One and a half years after the incident the subject has disappeared from the media and Marta appears in the press only in the political columns. The first twenty months of her mandate as mayor have been marked by a series of difficulties and conflicts, however the population has matured and can evaluate events from a political standpoint leaving her personal life on the side without caring whether she wears a skirt or trousers.

If women have been proving themselves capable at the front of public and private administration it is also natural that they dream of creating their own businesses. In Brazil this dream has often come true, as can be seen from the Project GEM, developed by a consortium of English institutions and coordinated by the London Business School. The objective of the project is to closely monitor world entrepreneurship. In the last survey carried out this year in 29 countries Brazilian women were ranked in an honorable and surprising third place. They represent 38% of the country's entrepreneurs, when the world average is 30%. And they also decide earlier that they want to be the owners of their own businesses. Seventy three per cent of female entrepreneurs are between the ages of 25 and 44 when normally only 55% of male entrepreneurs are in this age group. This characteristic gives them more time and preparation to fight in a highly competitive entrepreneurial environment with an extremely high rate, 60%, of early deaths. Almost a half of the women, 40%, who decide to face the challenge of starting a business do so out of necessity and this proportion is usually found in the food industry and commerce.

One good example of a woman heading a commercial business is that of Magazine Luiza, which bears the name of its owner, Luiza Trajano Donato. It seems quite normal that the chain of stores should bear the name of the owner however this was not an individual decision but the result of a contest promoted in 1957 to rebaptize the recently purchased store, in Franca, in the state of Sao Paulo. To this day Luiza proudly recalls that more than eight hundred people participated in

Presence of women as candidates for election			
Post.	1994 (%)	1998 (%)	2000 (%)
State Congress	7,17	12,64	14,56
Federal Congress	6,15	10,3	11,79
Governor	9,70	9,27	10,09
Senate	7,33	13,77	12,6
President	0,00	8,33	0,00
Average	7,17	10,3	11,79

Source: TSE

the contest and the fact that it was her own name that was chosen came to show her popularity amongst the public and clients. The idea of carrying out the contest was the first sign of Luiza's natural vocation for marketing. This talent, along with her love of retailing stimulated the business and today, 45 years later, the small store on main street has become the fourth largest retail network in the country with 112 establishments and revenues in 2001 of over \$250 million. This represented a growth of 8% compared to the previous year in times when many retailers were closing down their businesses. To keep control of running all the sales points that are spread out over four states and sixty cities the company created three strategically located distribution centers that make sure that all the stores have ready merchandise to meet the demands of their four million clients.

Luiza guarantees that her victory was the result of a lot of hard work. Now she wants to take things easy and has passed the command to another woman, her niece Luiza Helena. But she still remembers the early years when she became ill from the stress of over-work. It was her idea to create the annual promotion at five a.m. On a day chosen at random they announce the sales of all the goods displayed in the windows at extremely reduced prices. On that day the stores open at five a.m. and the lines start to form in the afternoon of the previous day. Their one-day sales are also famous and the customers come out in force as they know that they really last for only one day. Despite success and wealth, Luiza never moved from Franca and still lives next door to the first store, as if she could only sleep in peace knowing that Magazine Luiza is within eye sight.

Luiza's kind nature and relationship with her clients certainly contributed greatly to the success and strength of the business but she has an extra weapon that helped a great deal: the fact that she is a woman. This advantage allows her to understand automatically and profoundly what goes on in the minds of a good majority of the consumers when the time comes to decide what to buy. The female presence in the consumer market has been increasing and diversifying. Women have always been decisive at the time of purchasing food,



Luiza Helena, niece of the founder of "Magazines Luiza", chief executive officer of the group.

clothes, cosmetics, household electrical appliances and cleaning products; now, however, they are starting to make their opinions felt in new fields such as financial investments, automobiles and services. And every day new products appear especially targeting these customers.

The automobile assembly plants admit that they do not launch new models without the approval of female consultants. It was in order to avoid damaging silk stockings that Ford changed the material of their seats and adopted a new design of handles that do not break the finger nails of the drivers. A survey carried out by the manufacturer showed that women account for 44% of Ford's sales and the company's directors think that this percentage will soon increase to 50%. Therefore the change of the mechanical clutch to a hydraulic one is perfectly justifiable since it requires less strength and offers lower risks of damaging high heels.

Volkswagen paid special attention to female drivers when it developed its latest car, the Polo. The doors have a three stage opening system so that when opened they do not spring back and hurt the legs of those getting out of the car. Furthermore, it also has a device that automatically triggers the rear windshield wiper when the rear gear is engaged. All that to make life easier for women who sit behind the wheel of the Polo, a number that, according to

estimates by the manufacturer, should represent 37 out of 100 buyers, apart from exercising an influence on the decision of a further 35 buyers.

Fiat also altered at least one of its models, the Doblo, to include an item addressed specifically to the female public. A glove compartment placed above the driver's and passenger's head. The purpose of this item is to hide a purse that will still be within easy reach, but out of sight of the eyes of thieves. Safety is indeed one of women's main concerns when they choose an automobile. Surveys confirmed that while men are interested in power, performance and durability, women want safety, low prices, style and, of course, easy handling. Car manufacturers believe that managing to satisfy this complex puzzle of requirements is the way to maintain and increase the level of sales, especially after a survey that showed that women present an especially interesting peculiarity: they are more loyal to a specific brand than men. While 52% of the male clientele think about switching manufacturers only 31% of women want to try a new brand. That means that gaining the heart of a female buyer can yield dividends for a long time.

Not only in the automobile market are women proving to be an interesting market niche. Insurance companies discovered that, although they are famous for being "bad drivers", women are more rarely involved in traffic accidents. Furthermore they are also more careful in regards to leaving their cars on the street, as well as avoiding going to dangerous places. This combination, together with the woman's natural tendency to think safety has,

transformed women into preferential clients for the insurance companies. Special price tables were developed for the female public as well as new products that go beyond simple car insurance. Following a pioneer trend, started three years ago by Unibanco, competitors AIG, Itaú and Citibank announces this year the launching of a new health insurance specifically for women, that includes cover for breast cancer. The Itaú insurance division admitted that the decision to create the plan "Longer Life for Women" was strongly influenced by the company's own female employees who represent 60% of their workforce.

Porto Seguro, one of the country's largest independent insurance companies, created additional cover in its professional life insurance policy to meet the needs of female executives and self employed workers. They will have the guarantee of revenues for sixty days subsequent to giving birth. Previously the professional incapability insurance only paid for financial complementation in cases of illness or accidents which did not cover the post-delivery period during which time female professionals are normally unable to work.

However, creating new products for women is not enough; it is necessary to attract their attention. Advertising agencies know that the appeal to female consumers has its own subtleties and some decided to specialize in this area. One of them, inaugurated last year, is not content to have as its clients only manufacturers of beauty products or cleaning material and is concentrating on winning over banks, financial institutions and credit card administrators. According to this agency, women are involved in 78% of the purchasing decisions in all product segments. Even inside this female universe there are variables that draw the attention of advertisers. Ogilvy & Mather, a large international agency, is carrying out a special survey model addressed specifically to women of classes C and D. The results of the first survey with women living in the suburbs of large cities show that those interviewed, despite their financial limitations, are loyal to their favorite brands, are concerned with meeting their children's demands and, a surprising fact for the creation team, do not see themselves featuring in the usual adverts of the happy family.



A woman working in a textile plant in Santa Catarina.

By analyzing the poll data, it is easy to understand this statement; some 14% of the families are women with children and no husband. And the concentration of this type of family is mainly in the lower income bracket. Therefore the image of the father returning home at the end of the day, tired and missing his wife and children, not only means nothing to them and may even disturb them with exposure to a life-style that they would like to experience but cannot do so.

Almost all these women have experienced emancipation but not because of a dream of having greater freedom to overcome obstacles. They were more likely pushed into this situation when their companions did not admit to their paternal responsibilities or simply abandoned the home. Suddenly they see themselves alone and there is no time for questioning or room for choices, the only option is to apply their meagre knowledge to some activity that can guarantee the support of their children. They become maids, cleaning women, shop assistants, bus fair collectors, cashiers at stores, and ultimately they make up the silent majority that does not know the meaning of feminism but knows only too well what it is like to struggle. The same maternity leave that threatens the careers of executives is a blessing for workers. The family allowance, a very small amount that the government obliges companies to pay those employees who have under-age children (currently this amount is R\$ 11.26 per child) contributes to the family budget. Obviously these benefits only exist for those women who have a steady job with labor contracts. For each one of these women, there is a contingent of others that have informal jobs. These are the seamstresses, cake makers and street saleswomen who go out every day to earn a living uncounted by the official statistics and without the backup of the law. These working women that fill up the buses in the cities, and the trucks that transport the field workers, have their hands roughened and their eyes saddened by the daily difficulties but they do not miss the ability to get excited or emotional like any other woman. And all of them, somewhere in their souls, believe that life is going to get better, that their daughters will be happier and, who knows, one of them will even



Gisele Bündchen, the Brazilian model of international success.

be like that girl on the billboard next door.

A girl who was born in Horizontina, in the interior of Rio Grande do Sul, was discovered one day by the talent hunters of a famous model agency. Today, this girl is number one in the world ranking of the most sought-after models. Gisele Bündchen has a German name but her spirit is Brazilian. According to Carlos Miele, one of Brazil's leading designers: "She is punctual like the British, efficient like the Americans and creative like the Brazilians". The top-model, who at the beginning of her career used to go to work by bus because she could not afford to pay for a cab, now makes around five million dollars a year and was highly disputed by the world's largest agencies. Gisele, Luiza, Marta, Rita, Anita and Isabel are not the only examples of the strength, the beauty and the intelligence of the more than 86 million Brazilian women who help to write the history of this country on a daily basis.



Advances in technology

When a teacher at an infant school in the tiny and distant town of San Luis Obispo in California, United States, handed out the homework to the students one morning in February of 2002 she had no idea what this commonplace act symbolized for Brazil. After reading an article in the New York Times about the advances being achieved by Brazilian research into sequencing the *Xylella fastidiosa*, that causes so much damage to agriculture, the teacher, Lori Connelly asked the students to write to the Brazilian researchers thanking them for their work.

A farming region where the main cash crop is grapes for making wine, the town of San Luis Obispo is living under the threat of being afflicted by the so called Pierce disease, a blight that attacks the vineyards, caused by a variety of *Xylella*. The teacher suggested that the children write to the Brazilian scientists thanking them for their work and stressing the importance of this type of research to eliminate a blight that could put thousands of people out of jobs. Lori Connelly explained to her students, all between 8 and 9 years of age, the importance of the concerted efforts of the researchers and how discoveries that are for the good of humanity should not be limited by frontiers.

In fact, the project for the sequencing of the grape *Xylella* originated from a proposal by the American Department of Agriculture that Fapesp - the State of Sao Paulo Foundation for the Support of Research, enter a joint program that would take advantage of Brazilian expertise in this matter. The work brought together researchers Marie-Anne Van Sluys and Mariana Cabral de Oliveira from the University of Sao Paulo and Joao Paulo Kitajima from the State University of Campinas who joined with American scientists to develop the project.

The repercussion of the work carried out by these researchers symbolizes a great moment for Brazilian science, with emphasis for the Genoma project that placed the country in the forefront of one of the most important discoveries of the last few decades. The first of its kind to be developed outside the U.S. - Europe - Japan axis, the project became famous in January of 1999 when a group of researchers completed the genetic sequencing of the *Xylella fastidiosa* bacteria that causes the blight known as amarelinho.

The work involved 35 research laboratories located in the State of Paulo and counted with participation from the Citric Defense Fund. To carry it out Fapesp set up the Onsa network, the Organization for Sequencing and Analyzing Neucleotoides that is active at all levels of the projects.

"The sequencing project has already been concluded and we are now at the Functional Genome stage where 21 studies are analyzing the diverse aspects of the patho-genocide of this bacteria based on the genomic information being generated. Apart from this, there is a comparative study under way that involves other strains of *Xylella* like, for example, the one that attacks the vineyards in California.

The study was requested by the United States Department of Agriculture and is generating large amounts of genome information that will allow for comparative studies to better understand the differences between two very similar organisms that affect different sorts of plants, the orange tree and the vine. It is important to understand the differences between the genomes in order to understand how different strains affect different

types of plants, explains Jose Fernando Perez, scientific director at Fapesp. "The results of the project should appear in the mid to long-term. Before they can be applied to agriculture the results depend on the efforts of Functional Genome and contributions are also awaited from private companies that are becoming interested in the project. One of them is Allelyx formed by researchers and financed by Votorantim Ventures that will work with this genome information to create products of important commercial value for agriculture. One of the focal points of this company is the orange", adds Perez.

Another important discovery in this area was the sequencing and comparison of two related bacteria, the *Xanthomonas citri* (that causes citric cancer) and *Xanthomonas campestris* (that attacks vegetables). This required two years of studies.

The *Xanthomonas* are considered to be the most important kind of phyto-pathogens which are bacteria that cause disease in plants. Each type of plant suffers attacks from *xanthomonas* causing different types of disease.

Each one of the two bacteria sequenced during the project has approximately 4.1 million genes, being that 85% are the same and can be identified in both the *Xanthomonas citri* and *campestris*. However it is the remaining 15% that could explain how they act on the plants and how they cause diseases. It is calculated that the amarelinho blight and citric cancer cause annual losses to agriculture of more than R\$ 500 million.

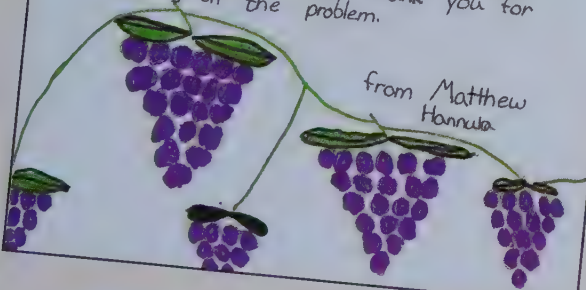
The largest challenge in Brazil in the Science and Technology area, according to Professor Jose Fernando Perez, continues to be that of creating a research environment outside the universities. "Brazil has developed a vigorous research system in the academic sector over the last 40 years, a feat worthy of praise, but we still don't find industry creating innovations based on research. This should continue to be the objective of C and T, (Science and Technology), for the next decade. There is a national consensus that what is needed is a research structure in the business sector to create a community based on innovation", affirms Perez.

In order to finance research, Brazil's challenge will be to draw up a new federal pact where all

Old Mission School
761 Broad St.
San Luis Obispo CA,
93401
February 28, 2002

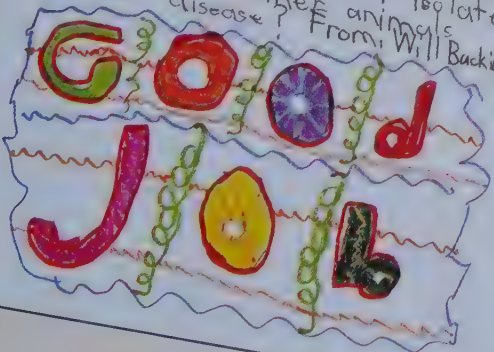
Dear Scientists in São Paulo,
We have learned about the Xylella project. Our class thought of ideas to get it away but their probably not as good as your's. The Sharpshooter looks ugly but we've got to stop it. And your company will sooner or later stop it. I hope the disease does not get in San Luis Obispo. Thank you for working on the problem.

from Matthew Hannula



Old Mission School
761 Broad St.
San Luis Obispo, CA
93401
February 28, 2002

Dear Scientists in São Paulo,
My classmates and I have heard about the Xylella project. I hope you can stop this from happening. I think you could get animals that kill the bacteria or isolate it. Could other animals have this disease? From: Will Buckingham



Old Mission School
761 Broad St.
San Luis Obispo, CA,
93401
February 28, 2002

Dear Researchers,
My classmates and I have learned about our problem and some solutions. We have also learned that "cooperation" is the way to go! Thank you so much for helping us save California! You won't regret it!

Ann Elizabeth Huist

COOPERATION
DISCOVERY HOPE
2000 LEARNING 2002

Old Mission School
761 Broad St.
San Luis Obispo, CA,
93401
February 28, 2002

Dear Scientists in São Paulo,
Our third grade class has been learning about the Xylella project. Our class has come up with some ways to kill it. One way was to bring in an animal to eat it. Thanks again!!

Sincerely,
Marissa Thy

THANK
YOU

American children from a Californian school thanking the Brazilian scientists that succeeded in genetically sequencing the Xylella.

the responsible parties take part, both in federal government and state government. This especially applies to those States that already have registered foundations in place for the support of research. Scientific and technological policy itself needs to be articulated between the federal government and the state governments to define objectives and find ways of reaching them. The Research Support Foundations of the states should function in accordance with the law. And the federal government has ways of stimulating this whilst the States should also counterbalance federal investment. This is how things work in Germany, especially after the reunification. This counterpart is important because it creates a mentality of investment in research on the part of the states and leads to the state's participation in defining the national objectives to defend their own interests.

According to the Director from Fapesp, the prospects for development in the sector are huge. The country possesses, today, an infrastructure for research in the area of basic research and is demonstrating an intense rate of growth not only in terms of the number of scientific publications but also in the effects that these publications are having. Under this new form of cooperation for science Brazil is going through a phase of developing more ambitious and challenging projects. This is a pre-requisite considering the complexity of the problems that science is trying to

dismember today. Areas such as the environment, genomics and the Internet, to cite but a few, prove that the problems cannot be solved by a small group working out of just one laboratory.

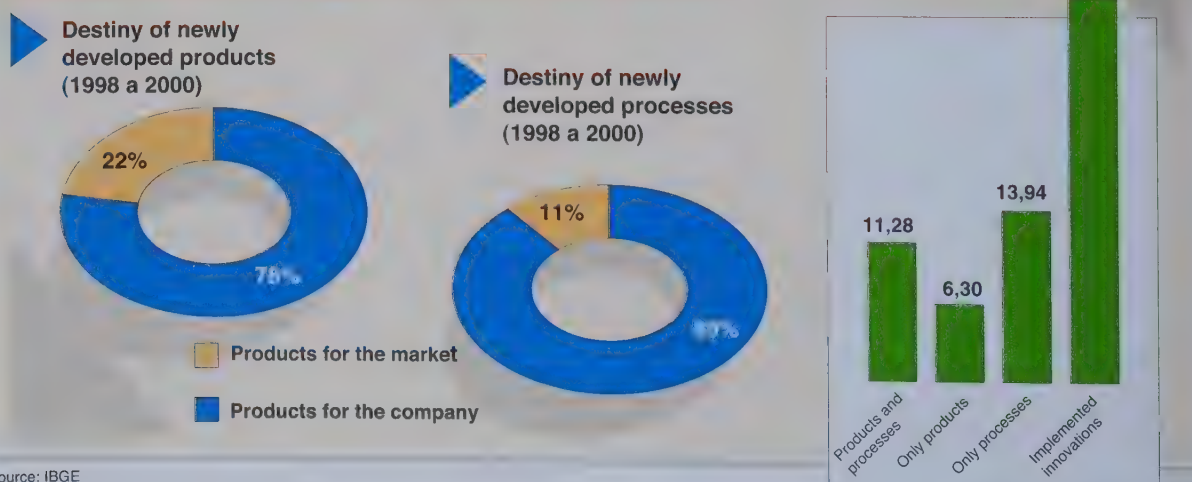
"It is important that the country's governmental authorities realize the opportunities that will be created and deposit their hope and trust in the competence of the system that already exists and forge ahead with far more ambitious projects", proposes Professor Perez.

The creation of sector funding, with the perspective of new and stable sources of financing for research provokes high expectations for the coming years. An initiative by Finep - Finance Agent for Studies and Projects of the Ministry for Science and Technology created and operates 14 different funds that received more than R\$1 billion of budgeting from the MCT of which R\$520 million were allocated in 2002.

The funds represent an innovative mechanism that is stimulating and strengthening the national C and T system. The objective is to amplify and guarantee the stability of financing for the sector and, at the same time, create a new model of management based on the participation of several social sectors in order to establish long-term strategies, define priorities, and focus on the results.

Included amongst the objectives to be reached: the modernization and amplifying of the C and T infrastructure, the promotion of greater synergy between the Universities, Research

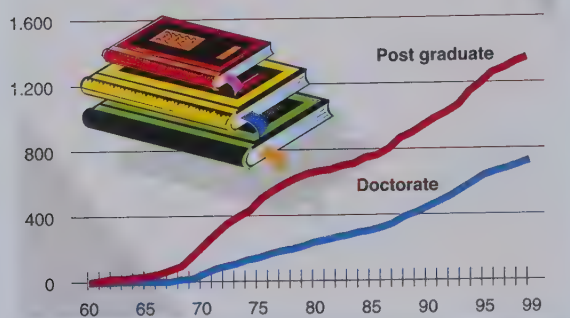
Participation of the number of companies that implemented technological innovations (1998-2000)





A traditional postcard view of the city of Rio de Janeiro showing the watchtower clock belonging to the old Central do Brasil railroad, built by IBM in 1943.

Evolution of masters and Phd courses



Source: MEC

Centers and the Productive Sector, the creation of new incentives for private investment in C and T, the stimulation and generation of know-how, innovations that contribute towards the solutions of some of the country's largest problems and the promotion and articulation of science together with technological development. These are the 14 funds in question:

CT-Petro - Sector Fund for Petroleum and Natural Gas.

Focus: to stimulate innovation in the productive chain of the petroleum and natural gas sector, the training and qualification of human resources and the development of projects by way of partnerships between Companies, Universities, Higher Education Institutions and Research Centers with a view to increasing productivity and production, reducing costs and prices, and improving the quality of the products in the sector.

Origin of the resources: 25% of the quota of the amount of the value that exceeds 5% of the production of petroleum and natural gas.

CT Infra - Infrastructure Fund.

Focus: modernization and broadening of infrastructure and services for the support of research developed in public higher education and Brazilian research institutions

Origin of the resources: 20% of the funds allocated to each of the Funds dedicated to the Support for Scientific and Technological Development.

CT - Energy Sector Fund.

Focus: to stimulate research and innovations regarding the search for new forms of energy

with lower costs and better quality; to develop and increase the competitiveness of technology in local industries together with an increase in international exchange in the R and D sector; the formation of human resources in the area and for funding the compatibility of local technology

Origin of the resources: 0.75% to 1% from the net revenues of the concessionaire companies for the generation, transmission and distribution of electrical energy.

CT - Hidro - Hydro Resources Sector Fund

Focus: adequating human resources and developing products, processes and equipment with a view to improving the use of hydro resources through initiatives in the areas of management of hydro resources, conservation of water in urban areas, sustainability in the Brazilian environment and the efficient and integrated use of water.

Origin of the resources: 4% of the financial compensation currently being received by electrical energy generators (the equivalent of 6% of the value of the production and generation of electrical energy)

CT - Transport - Ground Transport Sector Fund.

Focus: programs and projects of Rand D in Civil Engineering, Transport Engineering, logistics material, equipments and softwares that provide for an improvement in quality together with a reduction in costs and an increase in competitiveness in the road transport of passengers and freight.

Origin of the resources: 10% of the revenues received by the National Department for Transport Infrastructure - DNIT, in contracts signed with telephone companies, communications and other similar companies that use the infrastructure of the Federal terrestrial transport system.

CT Mineral - Mineral Sector Fund.

Focus: the development and divulgation of intermediary technology in small and medium-sized companies and the stimulation of technical-scientific research for supporting the export of minerals.

Origin of the resources: 2% of the financial compensation paid by companies of the mineral sector that hold mining rights

CT - Green Yellow/University-Companies

Focus: incentives for the implementation of

projects for scientific and technological joint research between universities, research centers and the private sector; to stimulate the strengthening of investments in R and D carried out by companies; support for initiatives and programs that strengthen and consolidate an entrepreneurial spirit and risk investment.

Origin of the resources: 50% of the Contribution for Intervention in the Economic Domain - CIDE, whose income arises from a quota of 10% charged on the remittance of funds overseas to pay for technical assistance, royalties, specialized technical or professional services; 43% of the estimated income of the Industrial Tax charged on goods and products that benefit from the tax incentives provided for in the Law for I.T.

CT-Espacial - Aerospace Sector Fund.

Focus: to stimulate scientific research and technological development connected to the application of space technology in the generation of products and services for the areas of communications, remote sensors, meteorology, agriculture, oceanography and navigation.

Origin of the resources: 25% of the revenues from the use of oxy-bite positions, 25% from the revenues received by the government relating to rocket launches, 25% of the revenues received by the government relating to the commercialization of data and images obtained by way of tracking, long-distance measuring and control of rockets

and satellites, and the total of revenues received by the Brazilian Space Agency - AEB deriving from the concession of licenses and authorizations.

CT - Telecommunications Sector Fund.

Focus: technological innovation in telecommunications, access to capital funding for small and medium-sized technology-based companies

Origin of the resources: 0.5% from the net billing of companies that are telecommunication service providers and a contribution of 1% of the gross income from participatory events carried out by way of telephone calls, apart from a start up capital resulting from the transfer of R\$100 million from FISTEL.

CT-Info - Information Technology Sector Fund.

Focus: strategic projects for research and development in information technology for Brazilian companies in the information sector

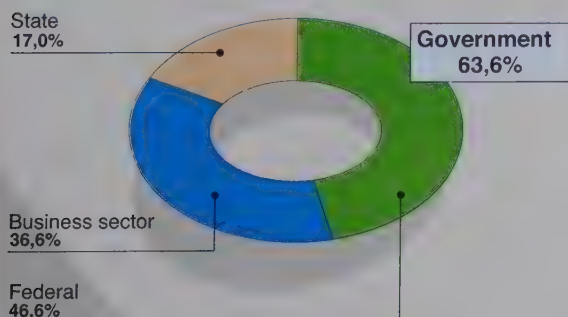
Origin of the resources: a minimum of 0.5% of the gross billing of companies involved in developing or producing goods and services related to information and automation that receive tax incentives under the Law for Information

CT- Healthcare - Healthcare Sector Fund.

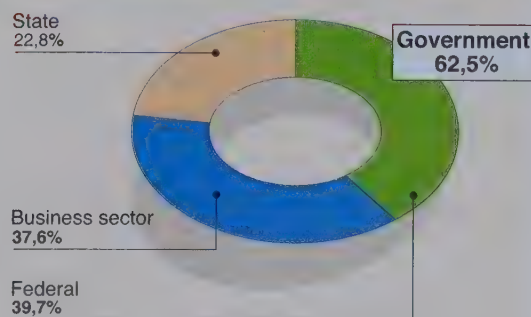
Focus: technological adequacy in areas of interest to SUS (public healthcare, biotechnology, pharmaceuticals), stimulation of an increase on the part of private investment in R and D in this area and the technological up-dating of the

Participation of the private and public sectors in applied resources (1999)

Science and technology



Research and development



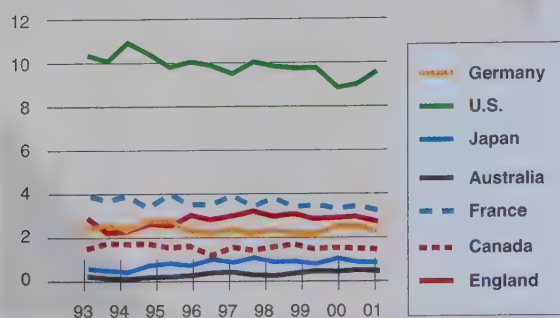
Source: Ministry of Science and Technology

D. DEFANTI

Foreign participation in the indexed Brazilian publications

In the Scientific Information Institute (ISI) - 1985 a 1999
Brazilian publications and coloboration

D. DEFANTI



Source: Fapesp

Brazilian industry for medical and hospital equipment, divulgation of new technologies that widen the public's access to goods and services in the area of healthcare.

Origin of resources: 17.5% of the Contribution for Intervention in the Economic Domain - CIDE, whose resources arise from the application of a quota of 10% on remittances of funds overseas for the payment of technical assistance, royalties, and specialized technical or professional services

CT- Aeronautica - Aeronautics Sector Fund.

Focus: to stimulate investments in R and D in the sector with a view to guaranteeing competitiveness in the internal and external markets in a search for technological and scientific capacity in the areas of aeronautical engineering, electronics and mechanics, the divulgation of new technologies, the technological updating of Brazilian industry and increasing the attraction for international investments in this sector

Origin of the resources: 7.5% of the Contribution for Intervention in the Economic Domain - CIDE, whose income derives from the application of a quota of 10% on remittances overseas for the payment of technical assistance, royalties, and specialized technical and professional services.

CT- Agronegocio - Agribusiness Sector Fund.

Focus: scientific and technological adequacy in the agriculture, veterinary, biotechnology, agricultural economics and sociology areas amongst others; technological updating of the agricultural industry through the introduction of new strains, reduction of diseases that afflict

livestock and an increase in the competitiveness of the sector; stimulation for the expansion of investment in the area of tropical agriculture biotechnology and the divulgation of new technologies.

Origin of the resources: 17.5% from the Contribution for Intervention in the Economic Domain - CIDE, whose income derives from a tax of 10% charged on remittances overseas for the payment of technical assistance, royalties and specialized technical and professional services

CT-Biotechnology - Biotechnology Sector Fund.

Focus: the formation and training of human resources for the biotechnology sector, strengthening of the local infrastructure for research and support services for biotechnology, expansion of the basic know-how in this field, to stimulate the formation of companies based in biotechnology and to the transfer of technology to consolidated companies prospecting and monitoring of the advances in know-how acquired by the sector.

Origin of the resources: 7.5% from the Contribution for Intervention in the Economic Domain - CIDE, whose income derives from a tax of 10% charged on remittances overseas for the payment of technical assistance, royalties and specialized technical and professional services.

Initiatives under the guidance of Finep and support projects that can be found throughout the country in the most diverse of areas. For example:

- The exploitation of natural resources in the Amazon that are used in cosmetics
- Automated irrigation systems in the State of Ceara
- Production of insulin in the State of Pernambuco
- Farming of the pintado fish in Mato Grosso do Sul
- Processing of coconut fiber in the State of Para
- Incentives to produce cocoa in the State of Bahia
- Small cotton mills in the States of Rio Grande do Norte, Alagoas and Paraiba
- Improvements in the wine production of Pernambuco
- Incentives for the production of minerals in

the States of Minas Gerais, Goiás and Tocantins

- Development of petroleum-related technologies in the States of Rio de Janeiro and Espírito Santo

- Aircraft, medicine and foodstuff projects in the State of São Paulo

- Scientific and foodstuff research in the State of Paraná

- Development of oil drilling technology in Rio de Janeiro and Espírito Santo

- Aerospace projects in the State of Maranhão

- Educational systems in Santa Catarina

- Research into medicine and healthcare in the State of Rio Grande do Sul

When he approved the increase from 10 to 14 operating funds the Minister for Mines and Energy, Ronaldo Sardenberg, said that all of this process of providing incentives for research and developing new economic activities is aimed at increasing the population's living standards. At the same time the initiative will improve the competitiveness of Brazilian products in overseas markets. "With these work-frames the system will be transformed into a strong ally of

the private sector in a search to create an environment in Brazil that is committed to innovation", affirms the Minister.

In the science and technology area, according to Sardenberg, the largest challenge is to sustain the progress already made and set the sights on the future. "Without important advances in the next ten years we are going to get left behind". Apart from all of the conquests such as the development of offshore oil drilling, advances in the aircraft industry, in biotechnology, in the production of serums and vaccines and even in the enriching of uranium, Brazil still has a lot more to conquer in the C and T field alerts Ronaldo Sardenberg.

In an attempt to sustain these advances the Ministry of Science and Technology reserved a budget for 2003 of R\$2.7 billion which is 35% larger than those of the last two years. Apart from government funding the private sector is becoming more and more involved in the biotechnology sector. Companies such as Allelyx that is controlled by the capital risk fund Votorantim Ventures, and Scylla are pushing



The Bank Boston Technological Center in Brazil is an international benchmark. The country is one of the most advanced in the world in terms of bank automation.

Brazilian participation in indexed publications in the Scientific Information Institute (ISI) - 1985 a 1999

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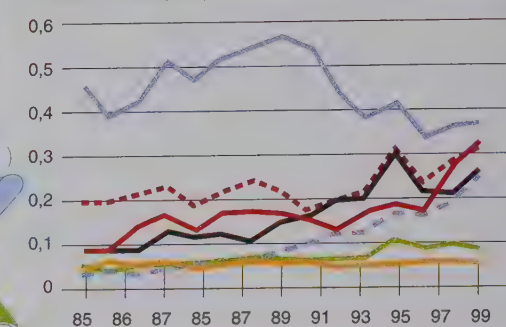
Base Science Citation Index

Publications index (in %)



Base Social Science Citation Index

Publications index (in %)



— Argentina — Korea — China - - - Brazil — Chile — India — Mexico

Fonte: Fapesp

ahead with the know-how that has been acquired so far and are striving to turn it into practical results for agriculture and for the production of foodstuffs. Dedicated to prospecting for new business in the biotechnology arena Votorantim Ventures represents one of the principle initiatives of the private sector in this area. The country is only taking its first steps but promises important conquests in the future.

The Inovar Project, another initiative from the Ministry of Science and Technology with intermediation by Finep, was created two years ago for the purpose of creating the necessary conditions to provide companies involved in research and the development of technology with investments that will help them achieve their goals. In the understanding of the parties responsible for the project it is necessary to equate the questions relating to Offer, Demand, the Conditions, and the Environment before the companies can have access to the financing. In the light of this, they have conceived the Inovar Fund Incubator, a structure focusing on stimulating the creation of investment and risk capital funds for start-ups and emerging companies that are technology oriented. As a part of this initiative a portal of venture capital was set up, with the support of the MCT, that will attempt to bridge the gap between entrepreneurs and investors. Finep's partners in the Inovar project are: the Interamerican Development Bank (BID), the Brazilian Service for the Support

of Micro and Small companies (Sebrae), the Society for the Promotion of Excellence in Brazilian Software (Softtex), National Confederation of Industry (CNI) and the National Council for Scientific and Technological Development (CNPq).

Another important institution involved in research and development of the country's resources is Embrapa - the Brazilian Company for Agricultural Research, connected to the Ministry of Agriculture, Fisheries and Supply. Its mission is to find solutions for the sustainable development of Brazilian agricultural businesses by way of the generation, adaptation and transfer of know-how and technologies that benefit the community.

Embrapa acts through its 37 Research Centers that can be found in almost all of the States of the Union. One of the largest research institutions in the tropics, the Company invests, above all, in the training of human resources. Currently there are over two thousand researchers working for the entity, 47% holding masters degrees and 49% with doctorates and they are operating with a budget of around R\$660 million per year.

They are responsible for coordinating the National System for Animal Research-SNPA, that comprises federal and state public institutions, universities, private companies and foundations that, in cooperation with each other, carry out research in the different geographical regions and in the fields of scientific knowledge.

Technologies developed by SNPA have

changed the face of Brazilian agriculture. A number of different technologies dedicated to incorporating the hinterland into the productive system turned this semi-arid region into the producer of 40% of Brazil's total production of grain and it is now one of the world's largest agricultural frontiers. Soybean was adapted to Brazilian conditions and, today, the country is in second place worldwide in terms of production. The offer of beef and swine has tripled and poultry increased ten times. Milk production increased from 7.9 billion liters in 1975 to 20.3 billion liters in 2000. Specific research programs managed to organize technologies and production systems to increase the efficiency of smallholding agriculture and incorporate small producers into agribusiness thereby guaranteeing an improvement in income and well-being.

In the sphere of international cooperation Embrapa maintains 275 cooperation agreements with 56 countries and 155 international research institutes that involve, basically, joint research programs. To be of help in these endeavors Embrapa has installed virtual laboratories to develop the latest in research and technology in

both the United States and France with financial support coming from the World Bank. These laboratories liaise with the United States Department of Agriculture in Washington and Agropolis located at the University of Montpellier in France allowing the researchers access to state of the art technologies in areas such as natural resources, biotechnology, information technology and precision agriculture.

The universities, obviously, could not be excluded from these and other fundamental projects: when one of the first Brazilian automobiles came rolling off the line, the DKW Vemag pickup, in November 1956, there were dozens of engineers, present who had graduated from the Sao Paulo Polytechnic School. Once again, as has been happening since the beginning of the last century, (it was founded in 1893 and started operating in 1894), the school embraced the task of promoting national development. By that time the school had already participated, either directly or indirectly through ex alumni, in most of the country's large engineering projects leaving a mark as to the contribution of the universities for the country's entry into a new industrial and technological era.



From its base in Hortolandia, in the interior of the State of Sao Paulo, IBM monitors data from 12 different countries including information from the four American facilities located in Boulder, Lexington, Raleigh and New York.

Amongst the group of students that accompanied the building of the first car manufactured in Brazil was Francisco Romeu Landi. "The automobile industry took a very important technological step forward paving the way for an auto parts sector that would guarantee quality supply", remembers the professor.

The assembly plants also posed a number of problems linked to the technological development of the metal industries. "We were obliged to study various types of steel that we knew nothing about. Steel that was shock and abrasion resistant for example. For this reason the contribution of the school and the IPT- the Institute of Technological Research was extremely important for the automobile industry to effectively start operating here".

A graduate with a doctorate in Engineering, professor-in-charge, chief of department and director-president of the Technical-Administrative Council of Fapesp-the State of Sao Paulo Foundation for the Support of Research, Landi was the school's director from 1898 to 1993 and still works closely with the present directors planning new courses to train the engineers of the future so that, within ten to fifteen years, the country will be blessed with the work force that it needs.

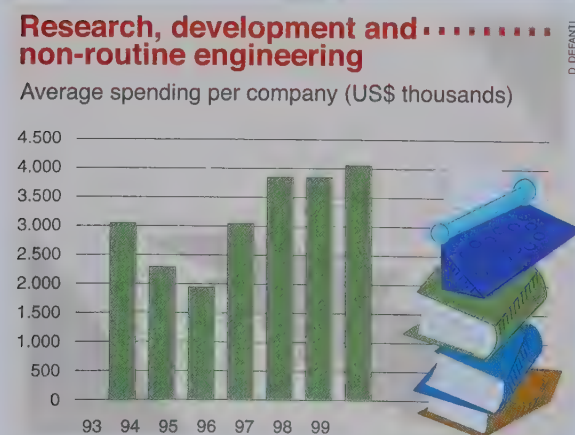
The curriculum of achievements obtained by the Polytechnic School is one of the richest in the whole country. At the beginning of the last century the Poli was active during the coffee boom helping to expand and modernize the already existing

railroad network and, later, the highways that were needed to transport the coffee. Together with IPT the school participated in the construction of the National Steel Company (CSN) in the technical area of production apart from offering soil technologies and geo-technical research. Soon after this it was looking after the training of specialists and the planning in areas such as the production of cast iron, steel and non-ferrous metals. Together, IPT and Poli also helped build Cosipa and the road bridges that span the abysses of the coastal mountain range. The technology needed for making concrete was also developed in the laboratories of the Polytechnic School. These two institutions also left their mark on the large hydroelectric projects like the Cantareira catchment system in Sao Paulo and in base industries, (steel, aluminum, metals, cement, alkalines, cellulose and pulp, rubber, exports of iron ore, shipbuilding, machinery and heavy electrical material). The school also played a key role in carrying out Juscelino Kubistchek's Target Plan, (50 years in 5). The Executive Group for the Automobile Industry was formed, in 1956, during the JK government. At the time, many companies presented projects for the implementation of assembly plants. Amongst them were General Motors, FNM (Alfa Romeu), Karmann-Gia, Mercedes Benz, Simca, Toyota, Vemag, Willys, Overland and Ford. Between them they absorbed a large part of the students graduating from Poli.

Over the following decades the school took part in a number of projects under the military government, the construction of the Sao Paulo metro system and the Masp Museum (the largest free span in the world), and also collaborated on projects with Petrobras, Embraer, and the sectors for Computers and Electronic Engineering of the Naval and Oceanic Engineering Institute.

"We need to always be thinking ten years ahead", affirms Landi. "It takes us five years to produce an engineer, then he needs another five to gain experience".

The evolution of Brazilian industry will be accompanied, and in many cases surpassed, by the service sectors such as banking and commerce that owe a lot of their progress to automation, a phenomenon that came to the forefront less than



Source: Anpel



Viaduto do Cha, (the Tea Viaduct) a reminder of the development of technology in concrete construction during the first half of the XX century (1936).

ten years ago. These are the systems that allow for millions of bank transactions every day in the 170 institutions operating in the country.

They allow the Internal Revenue Service, for example, to receive, process, and analyze Income Tax Returns and the Post Office to organize and distribute the mail to the millions of Brazilians that visit their branches each day.

Automation is also responsible for processing data in the Commodity and Stock markets, brokerage houses and in the airlines for issuing of tickets. Supermarkets control their inventory and communicate with their suppliers using software that is capable of selecting prices and determining delivery deadlines.

Industries use automated systems to gain time and reduce costs on the production line.

In agribusiness chips are used to monitor the growth rate, weight and movement of the cattle.

Examples are multiplying constantly and there are few sectors, today, that are not using some form

of information system to modernize their operations. Companies such as IBM, Microsoft, Oracle, Sun, HP/Compaq, Cisco, EDS, SAP, Unysis and Computer Associates have brought resources to Brazil that permit the banking industry and service sectors to evolve in terms of production and the conquering of new markets. These resources include software for banking and industrial automation, administrative and financial management, electronic business, data storage, control of electronic networks, operations of large services for electronic information and customer service. Work carried out by Oracle, Unyssid and Embratel transformed Brazil's polling process in the recent elections into one of the most modern in the world, even ahead of the United States and a number of European countries. But operations in this market are not limited to foreign companies. In the space of a few years Brazilian companies have appeared offering software or specialized services on an international level. Amongst these attention

must be drawn to Datasul, Scopus, Modulo, Logocenter, Eversystems and innumerable others that are conquering more and more market share often offering software or services that the foreign companies don't possess and with a degree of quality that has been tested at an international level.

Although the major transformations affecting these markets have occurred over the last ten years some of the companies have been in Brazil for a long time. IBM the world's largest information technology company, (summing up the software, hardware and service operations the company has annual revenues of over 80 billion dollars), has been in Brazil for more than 85 years. From the small and awkward calculators and punch card machines to the clock that the company installed in Rio de Janeiro's main railway station in 1943, the American giant's operations in Brazil, today, are amongst the ten largest outside of the United States. The corporation operates in 170 countries. Serpro, the Internal Revenue Service, the Post Office, the largest banks and industries and supermarket chains can be found amongst its main clients.

From an electronic command center installed in Hortolândia (SP), IBM processes data from

company units installed in twelve different countries. In Hortolândia, Brazilian employees are connected 24 hours per day to four of the company's huge centers for managing data in the United States: in Boulder, Colorado; Lexington, Kentucky, Raleigh, North Carolina; and New York. In the first phase of the operation the data from IBM's operations in eleven countries and the United States is sent to the four American centers. Afterwards it is processed and monitored by the people at Hortolândia on an enormous board that shows the operations of each one of its active servers and data banks. A similar operation is carried out in Sao Paulo by Bank Boston that also monitors, from here, operations in several countries in South and Latin America and the South of the United States

The Technology Operations Center allows Bank Boston to have total control over the technology services rendered to its clients "This requires a different kind of quality in terms of using technology. The center has become a world reference point for our organization and is part of our strategy to offer increasingly better services", affirms Marco Antonio Nordi, Director of Technology.



Museu de Arte de São Paulo, (the São Paulo Art Museum), the world's largest freeform span, built in reinforced concrete.



Escola Politécnica da Universidade de São Paulo (Sao Paulo Polytechnical University) helped design the road bridges that traverse the abysses of the coastal mountain range on the highway to Santos.

Installed in the old financial center of Sao Paulo, the Technology Operations Center also permits monitoring all of the processing of messages in the Brazilian Payment System-SPB apart from accompanying work developed through the site located in Miami that lends support to local operations in the Private Banking segment

The monitoring of the Mexican business, from Brazil, was completely re-modeled and incorporated new technological components that came into being with the growth of the business. The operation of services such as Boston Connection Internet is also controlled from this location. This is a new channel, via the Internet, to service clients of the Cash Management account, not forgetting the product Industria.net which is a customized solution via the web for large customers in the wholesale sector.

In terms of banking automation Brazil is amongst the best in the world. Access to accounts via the Internet, the so-called Internet Banking, arrived in Brazil in 1996 as an initiative of Scopus, a Brazilian owned company. It was their technology that allowed Bradesco to be the first financial institution in Latin America and the fifth in the world to offer its customers bank

services through the Internet. Founded in 1975 by a group of engineers from the Polytechnic School, Bradesco took over the company in 1989. Since then it has concentrated its attentions on information technology services related to bank automation such as support and maintenance, and the development and integration of systems. In 2001 the company filed revenues of R \$112 million and expects to reach R\$120 million in 2002.

The Brazilian automobile industry is also moving swiftly ahead in the use of Information Technology systems. From the design of the vehicle and, until it reaches the factory floor the manufacturers are using all the modern techniques at the disposal of the sector. The General Motors plant in Gravatai is one of the most productive in the world and is capable of producing one vehicle every two minutes. Apart from the systems Cad, (Computer Aided Design), and CAM, (Computer Aided Manufacture), the unit also has CAE, (Computer Aided Engineering), at its disposal and PDM, (Product Data Management).

With all of these elements the time spent to develop and build a car fell from 48 months (at the beginning of the nineties) to the current 24 but the company wants to reduce this further to

FINEP



REGIONAL PROJECTS



somewhere between 18 and 12 months.

The level of automation on the assembly lines is high. There are 112 robots working in the GM plant in Gravatai in functions that go from soldering and installation of parts to tests for comfort and visibility.

The Volkswagen/Audi plant in Sao Jose dos Pinhais, Parana, has 130 robots and a 50% level of automation including the robots and other types of equipment. In Sao Bernardo do Campo there are 400 robots and a level of 60% automation. They are used principally for soldering, fitting of windows, painting and manipulation of metal parts.

The Ford factory in Camacari in Bahia has 512 robots and other automated equipments that are distributed as follows: 240 robots in the body mounting area (the mounting is carried out 100% by electric tighteners with permanent torque control).

The stamp shop is totally automated, (according to the company this practically eliminates any risk of work-related accidents). The automatic systems control more than a half of the operations including mounting, soldering and checking of geometrics.

The paint chamber is fully robotized and the painting process is a model worldwide. It is the first amongst Ford's factories to use the Eco-M system with high rotation turbines and four robots that execute the painting of the body exteriors automatically, homogeneously, and with no wastage of paint. According to the company most of the machinery (80%) is made locally.

The same thing happens in retail: when a customer goes through the checkout in a supermarket where a reading is taken of the price and type of product the person has no idea of the facilities provided by the bar code. Contained therein is information that registers more than just the sale. There is other data available that can be used both by small supermarkets as well as the major chains. Inventory control, replacement of stocks, updating of prices, even the profile of the customer are included in the lines that make up the bar code, one of the most important innovations that Information Technology has

brought to commerce. Without this electronic register it would be impossible for a huge chain like Companhia Brasileira de Distribuicao (CDB) to manage the millions of products that flow through its 443 stores, in 11 states, that do business under the flags Pao de Acucar, Barateiro, Se, Extra and Eletro. The relationship with the suppliers is also carried out electronically to facilitate orders, terms and even the hour that the merchandise should be delivered. From the largest retailers to the smallest shops, restaurants, and gas stations, automation tools are spreading throughout commerce. The debit card, that is increasingly substituting use of checks and money, makes transactions safer because it reduces the amount of cash in the stores. On passing the card through the terminal to close out the sale the store is using a simple tool. But behind this resource there is a huge apparatus comprising computers, optical fiber for signal transmission and data processors that provide the customer's bank balance in seconds or minutes and guarantee that the bill can be paid.

From research laboratories to industries, banks, commerce, agriculture, schools, public services and in people's homes technology is playing an ever-increasing role in our daily lives. Time saved by sending a simple e-mail across the world by computer makes things so much easier that a lot of people are not aware of the changes taking place in today's communication standards. The facilities and volume of data available on the Internet has created a new society of information unparalleled in history. Communication by e-mail, either personal or business, permits a degree of proximity that people could never have dreamed of. This is technology at the service of mankind. If, in Brazil, it is not yet available to everyone, the space for growth and the scope for learning, notably amongst the young even if they are in the smallest of villages or the poorest shantytowns, is enormous. This can be seen in the public school system where computers are arriving in a steady and increasing stream.





The Fourth Generation of consumers

Brazil is about to enter its fourth generation of consuming. These generations are not measured in a linear sense or over chronological timeframes: some take time to mature others leap ahead. The first one in question occurred in the fifties in what was basically an uncomplicated country that relied on its rural roots and in which 62% of the 52 million inhabitants thrived in the countryside. Although it was a Federation, the Republic seemed like it was more of an archipelago of provinces. Isolation was not a greater factor only because of the existence of a strong channel of communication, the radio. Four million radios that were tuned in to 480 transmitting stations told one part of the country about what was happening elsewhere. In an impromptu way people in the countryside learned about something that was becoming quite the rage in São Paulo: television, a form of media that was inaugurated in 1950. It was by radio, for example, that Brazilians learned the name of the winner of the 1955 elections for the Presidency of the Republic: Juscelino Kubitschek de Oliveira, a man born in the State of Minas Gerais, a doctor, an ex-worker in the postal service and an ex-captain in the Military Police. Nobody knew, especially the person who was voting, that this man would change the future of Brazil - turning caves (in a manner of speaking)



Romi-Iseta was the first Brazilian vehicle manufactured in Brazil in 1955. It was produced by Romi, under license from the Italian company Iso Autoveicoli SpA.

into cities - and resuscitating the lives of the population from the depths of despair to a position of hope

Only two capital cities, São Paulo and Rio de Janeiro were home to more than a million inhabitants and the country was serviced, in an acceptable manner, by its 35 thousand kilometers of railroads and 20 railway networks. An automobile was an unthinkable luxury: the whole fleet of vehicles numbered 426,621, or one for every 130 inhabitants (today this ratio is one for every 8.75). This, of course, did not pose a problem for Brazilian ingenuity. In 1925 the General Motors factory was inaugurated in the Ipiranga neighborhood of São Paulo. To tell the truth it was more of an assembly line as the components, parts and accessories were all imported from the United States but one year after it was inaugurated it commemorated the production of its vehicle number 25,000

Once in power, Juscelino decided that one of his priorities was to build a local automobile industry. To achieve this aim he could count on steel from the Companhia Siderúrgica Nacional,

(the National Steel Company), that was inaugurated in 1946 with a loan of \$5 million from the United States. From there on the years passed quickly. In 1955 the first locally manufactured car left the factory - it was called the Romi-Isetta but unfortunately this accomplishment was forgotten over the years. It was a bold move by an industrialist from Santa Barbara d'Oeste, Americo Romi. He had succeeded in obtaining the rights from the Italian Company Iso-Autoveicoli so that his Romi Industries, specialized in heavy machinery, could build the car here. It was a curiosity to say the least: oval in shape, only one door (in the front), seating for two people and a 13hp engine. Even so, more than three thousand units were manufactured

At this time there were 700 auto parts manufacturers that were the predecessors of the automobile industry. In 1956 the Executive Group for the Automobile Industry (GEIA) was formed and disapproved the continuation of the Romi-Isetta project due to the car's fragility, and the automobile was condemned to an early death. The year of 1956 brought with it two significant events: Mercedes Benz inaugurated its first factory and

launched the first Brazilian trucks fueled by diesel and Vemag - Vehicles and Machines - launched the DKW station wagon. The following year Volkswagen came out with its first vehicle produced in Brazil, the van, and then the country's first passenger vehicle, the famous beetle, followed by the first utilitarian pick-up the Rural Willys and the Willys Overland that were launched in 1959.

GEIA's priorities tended towards an industrial preference for trucks and tractors. We were, after all, an "agricultural country", and, as such, we would need help to plant, harvest and transport the crops. However the passenger vehicle ended up receiving most of the attention. For a good while this was criticized as being a change of objectives; history would later prove that this was not the case. Juscelino, with his automobile industry and democratization of government prepared the way for the existence of a Brazilian middle class. He made it happen. Another necessary adjustment to the infrastructure lay in the highway network but this did not occur because of the simple creation of an automobile industry. The bare truth was that the railroads had become decadent in 1950.

In ever increasing numbers the urban middle class began avidly consuming whatever was available. When this tendency consolidated itself, in 1965, it created an episode that would become one of the most remembered cases in Brazilian marketing. At that time, the priority of the military government that had seized power the previous year, was fighting inflation that was bordering on 92% per year. A lot of companies and people were hurt by this war on inflation that instigated recession, bankruptcies and unemployment. The automobile industry found it was lost in the crossfire because it did not know how it would manage to sell the 185 thousand vehicles it was planning to manufacture. A form of financial alchemy was found to resolve the problem: the manufacturers would lower the prices of the vehicles and the Caixa Economica Federal, (Federal Savings Bank) would open up direct credit lines for consumers to finance the purchase of their vehicles. Unfortunately the prices were lowered at the cost of quality. The automobiles were stripped of their chrome trimmings and other accessories and the upholstery was simplified.

It didn't work, because they had presumed that the Brazilian consumer had not yet acquired any kind of taste for sophistication. Very few people wanted to have in their garage an object that would represent, to their neighbors, a lack of purchasing power or an inability to possess one of the "stars" of the industry at that time: the Volkswagen Beetle, the Willys Gordini, or the Vemag DKW. At the same time that these simpler products were being ignored a certain Brazilian passion for novelties and a desire to acquire them revealed itself.

The protection against imports, through tariff restrictions, was already under way but some products were not yet heavily taxed. Amongst these we could find the Spica SP 60 portable radio manufactured by the Japanese company Sanritsu that was an icon of this era of innovations. Brazilians were introduced to the era of the transistor and it caused a buying fever that unfortunately was not recorded but was definitely enormous. It worked on six transistors, came in a plastic box with a leather cover and received middle band waves. Although somewhat ugly by modern day standards this small object opened the doors for a national industry for sound equipment in the seventies.

It was in this decade that the second wave of consumerism found its roots. Anchored in an economy that had been revitalized by the reforms carried out in 1966 by the Ministers, Roberto Campos, (Planning Ministry), and Octavio Gouveia de Bulhões, (Finance Ministry), the country was growing. Between 1969 and 1971 the GNP grew at a rate of 11% per year; in 1973, the last year of the Brazilian miracle, the rate was 13%. Average inflation was less than 20% per year. The Sao Paulo stock exchange registered amazingly positive results. Between 1968 and 1971 the Bourse would increase 500% in dollar value. In 1972 it fell by 50% in dollars.

The middle class reaped the most benefits at this first stage although some symbols of consumerism were still a bit on the slow side. Credit cards were one example. In 1970 there were 290 thousand cards in circulation which meant one card for every 322 inhabitants and is a meaningless number if compared to today's average statistics of one card per 6 inhabitants. In the homes,

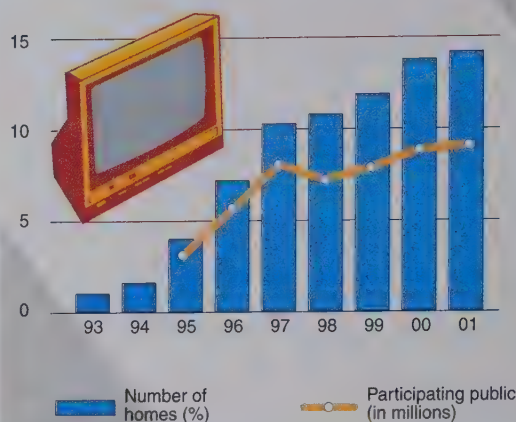
however, another object of consumption started to make its presence felt; color TV that made its debut in 1972 when the first transmission was made from the Grape Festival, in Caixias do Sul.

During this time of severe political restrictions the government hid itself behind economic hyperbole and the constant pronouncement of mind-boggling projects that contributed to the official propaganda denominated "Brazil Grande", (a larger Brazil). This was the time when a lot of polemical decisions were taken some of which are still being debated today such as the attempt to gain entry to the nuclear fraternity, for pacific ends, by building Angra I, the first nuclear-power plant, the implementation of Nuclebras, and the signing of the Brazil-Germany nuclear agreement.

It has to be said, however, that in terms of infrastructure the initiatives worked and they came well ahead of the creation or expansion of new markets. We can find two fine examples in the energy and telecommunications sectors. In the first case we have the decision to build Itaipu, in the second the drive to improve the network. In 1970, when there were 1.4 million installed terminals for a population of 93 million the first interstate connection - (Sao Paulo/Porto Alegre) - became operational and brought with it the long distance dialing system. There was a precarious system already in place since 1958 linking Sao Paulo to Santos. Two years later the Brazilian Telecommunications Company, (Telebras), was formed and in 1975 International Direct Dialing was introduced by way of Embratel. All of a sudden we were connected

Access to cable T.V.

D. DEFANTI



Source: Brazilian Association for Contracted Telecommunications. Data ref. 2001. An average of 4 people per home was taken arriving at an overall total of 14 million

with the rest of the world.

The life of the consumer in this second phase was not an easy one considering the successive crises the country was exposed to. Principally because it was at this time that the world was rocked by the oil crises. The first occurred in 1973 when the countries in the Middle East, during the Yom Kippur war, - Egypt and Syria against Israel - decided, together with other oil producers that were gathered under the flag of OPEP, to increase the price of oil by 70%. Nine weeks later they decided to hike the prices by a further 128%. In other words, the price had jumped four times. Less than six years later there was a new shockwave when the ayatollah Khomeini took power in Iran and local production was interrupted. During this time the price of a barrel of oil jumped from \$2.90 before the crisis to \$50 at its peak.

As far as Brazil was concerned this was disastrous due to the countries over-exposed dependency on imported oil. At this time about 80% of national consumption was supplied by OPEP because local production did not go much beyond 20% - today the situation is basically the opposite. The whole country suffered, from the man in the street trying to put gas in his car to industries that were forced to use equipment - boilers for example - that could take advantage of other sources of energy. Curiously Brazil was the only country to come out of this situation on

Industrial Sales of televisions

(In thousands)

D. DEFANTI



Source: Eletros and Gazeta Mercantil Information Center



All the service stations throughout Brazil are equipped with alcohol pumps, a clean and renewable energy.

the upside because the energy crisis got the wheels moving on the Proalcool Project that, until this day, is the only program for alternative automobile fuel that has been put in place since the oil crises.

In spite of the international crisis the Brazilian government did not abandon the enormous projects that were an integral part of the II Plan for National Development, (PND), that was intended to increase local production in basic areas such as consumer goods and inputs. As there was no money available locally the government started borrowing overseas through its state-owned companies. The outcome, on the positive side, was that the mega-projects presented a solid base for local industry to advance in terms of quality. On the negative side there was a forced co-existence with high public debt, economic stopgap measures, and problems resulting from the exchange rate.

Another major obstacle for a faster development of the market during this second generation was the excessive intervention of the government in

private business. In some cases it sinned due to an excess of good intentions. Take a look at the computer industry that should have followed in the tracks of telecommunications. Futurologists, at that time, were in love with the word *telemática* - the union of a modern telecommunications system with one of information technology that would result in a tool with unlimited resources. Although they got the name wrong they were right in their view of the future. The first computer arrived in the country in 1957 and was imported by the government of the State of São Paulo. As related by Vera Dantas and Sonia Aguiar in their book "Memórias do computador" (Memories of the Computer) it was a Univac 120 model that performed 12 thousand arithmetical operations per minute and calculated the consumption of water in the capital city.

Over the next twenty years, or in 1977, Brazil, as a whole, accumulated a number of 8,500 computers. This number is lower than that of the 9000 computers sold on a daily basis today. During these years the Cobra Company was founded and this State run entity was given the task of developing a homegrown product. The insistence in protecting the market in favor of the local manufacturers seriously delayed the

Concentration of industry

The 20 largest municipalities in terms of manufacturing

D. DEFANTI

	1996	2001
Sao Paulo	19.5	13.9
Campinas	4.8	6.2
Sao José dos Campos	4.5	5.9
Rio de Janeiro	5.4	5.3
Porto Alegre	3.6	3.7
Belo Horizonte	3.3	3.4
Curitiba	2.9	3.3
Manaus	3.3	3.0
Salvador	1.9	2.3
Sorocaba	1.9	2.3
Macaé	2.8	2.1
Guarulhos	1.2	2.0
Vale do Paraíba fluminense	0.9	1.5
Santos	0.9	1.5
Osasco	1.8	1.5
Joinville	1.5	1.4
Fortaleza	1.6	1.3
Caxias do Sul	1.2	1.3
Jundiaí	0.8	1.3
Ipatinga	0.8	1.2
TOTAL	64.6	64.4
State of Sao Paulo (8 municipalities)	35.4	34.6

Source: IBGE - Research Directory, Department of Industry

democratization of information technology. With the end of protectionism, in 1991, local and foreign manufacturers tried to take care of the huge latent demand. By 1993 there were 1.8 million micros in use. Today this number is more than 11.8 million. The National Residential Research Program (PNAD) includes the possession of a micro on their list of available goods in Brazilian homes. In 2001 it was found that 12.6% of homes had computers and 8.6% of these had access to the Internet

Overcoming this lag in the supply chain would only come about in 1990 together with the third wave of consumerism. Although it was clumsy, and somewhat disastrous in the overall, the government of Fernando Collor had at least one good thing to say about it: it effectively opened up imports that would speed up the modernization of industry and services synchronizing them with the inevitable globalization of the economy.

Curiously the key that opened this door was once again the automobile. In June of 1990 a splendid BMW was off-loaded in the port of Santos imported by a private individual at what were now considered to be reasonable import duties. On a large scale, and because it was economically



Subsequent to the opening of the market, the increase and consumption of computers has been ongoing.

accessible, the Russian manufacturer Lada flooded the country with 33 thousand vehicles that were sold between 1991 and 1993. These Jurassic models met with approval, not because they were efficient but because they were imported and cheap.

Things turned into something of an orgy of consumption because they did not stop just with automobiles. Once the doors were opened Italian pasta and Chinese Christmas decorations appeared on supermarket shelves. They were cheaper than locally produced products. The sudden bursting of the dam left a number of birthmarks on this third generation of consumers. Unaccustomed with competition some segments of local industry had become used to a non-competitive environment, that they presumed to be

protected, and were charging whatever they thought was acceptable. Basically they were saying to the consumer, take it or leave it. Subject to comparisons in terms of price this way of thinking inevitably started to lose market share and had to re-think its policies in regards to modernization

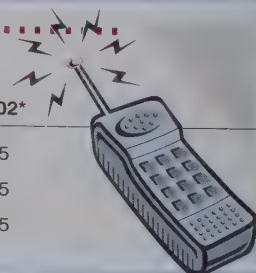
This realignment could not happen overnight due to the chaotic situation of the Brazilian economy. When he renounced the Presidency on

Telephones become mobile in Brazil

In millions of calls

	1990	1992	1994	1996	1998	1999	2000	2001	2002*
Land line	10.3	11.7	13.3	16.5	22.1	27.8	38.3	40.5	45
Mobile	0	0.03	0.8	2.7	7.4	15	23.2	29.2	37.5
TOTAL	10.3	11.73	14.1	19.2	29.5	42.8	61.5	69.7	82.5

Source: Anatel *Estimate



D. DEFANTI

the 28th of December 1992, Fernando Collor de Mello left a scandalous inflationary situation for his successor Itamar Franco to deal with. In 1993 Brazil would break a record that could be considered unthinkable; an annual inflation rate of 2,708.55%. In this environment neither companies nor private citizens could make any sort of plans. As far as the middle class was concerned most people spent their days performing financial acrobatics with their banks, investments, and savings funds in an attempt to keep ahead of the game. Every housewife became a specialist in economics.

The strategic Plano Real of 1994 changed all this. The country basically had to re-learn how to live in this new reality, one of the main points being how to live without huge inflation rates that affected everybody but especially the poorer segments of the community. During this new phase Brazilians witnessed a whole new gamut of transformations: cable TV, for example, became a part of everyday life with a promising growth rate although it did tend to bottom out at 3.5 million participants. With the privatization process they also witnessed the blossoming of the huge telephone market. Available access

numbered 13.2 million landlines and 755 thousand cellular phones. Today these numbers have jumped to 45 million and 37.5 million respectively. Nobody at that time thought it would ever be possible to buy a telephone as easily as buying a pack of cigarettes.

Because of the privatization, the sell-off of government companies, and the fact that Brazil with a stable currency could show off all of its potential there was a rush of investments towards productive activities. This, of course, included foreign investment. From 1977 to 1993 the direct investments did not surpass \$1 billion per year. In 1994 this barrier was broken and \$1.7 billion entered the country. This effect snowballed until reaching a peak of \$30.5 billion in the year 2000. The total amount of foreign investment leaped from \$42.5 billion in 1995 to \$172 billion in the first quarter of 2002.

During this scenario the most illustrious object of consumer desire, the locally produced automobile, came of age. With an open market, new parameters were established in order to satisfy a more demanding public. Manufacturers that had initially shown little interest decided to set up business in a country that promised to be one of



After the market opened for the import of vehicles, consumers became more demanding.

Production of automobiles..... doubled in 10 years

(In thousands)

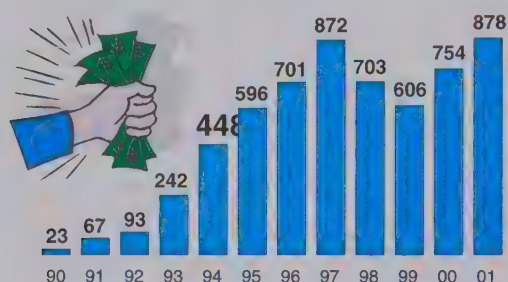
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	Production	Sales	
		Produced	Locally
1990	663	533	533
1991	705	598	583
1992	816	597	577
1993	1,100	904	851
1994	1,249	1,128	976
1995	1,297	1,407	1,107
1996	1,459	1,406	1,246
1997	1,678	1,570	1,361
1998	1,254	1,212	967
1999	1,110	1,012	899
2000	1,362	1,177	1,076
2001	1,496	1,295	1,177



...demand for compacts increases...

Local sales of automobiles 1.0 (in thousands)



...and there is still room for expansion

Owners of vehicles per capita of the population

EUA	1.3	Bélgica	2.0
Austrália	1.5	Suécia	2.1
Itália	1.6	Rep. Tcheca	2.7
Canadá	1.7	Coréia do Sul	4.2
Japão	1.8	Polônia	4.3
Alemanha	1.8	Argentina	5.5
França	1.8	México	6.8
Áustria	1.9	Brasil *	8.8
Reino Unido	1.9	Federação Russa	11.1
Espanha	1.9		

Source: Anfavea, American Automobile Manufacturers Association (AAMA) Society of Motor Manufacturers and Traders (SMMT) and the Gazeta Mercantil Information Center. * Estimate

the best markets in the world, perhaps even the second after the United States. This promise has still to be fulfilled and there is still a lot of room to grow: today there is one vehicle for every 8.75 inhabitants. Without traveling too far we can find, in Argentina, a ratio of one for 5.5 inhabitants.

The automobile market in this third generation of consumption achieved its best level of performance in 1997 when 1.36 million vehicles were sold locally. According to the Federação Nacional dos Distribuidores de Veículos Automotores, (the National Federation of Automobile Distributors), total sales came to R\$61 billion in 2001 (\$26.3 billion) with the

following participations: cars and light trucks, R\$48.6 billion, trucks R\$6.9 billion, motorcycles R\$4.5 billion and farm equipment R\$1.1 billion. The number of dealerships dropped from 5,235 in 1997 to 4,292 in 2001.

Bolstered by the Plano Real it was the retail sector that reacted most vigorously to the change in the consumer's profile. Especially the supermarkets that present one of the most dynamic success stories of recent years. At the end of the nineties this sector witnessed a large number of mergers and acquisitions both amongst local companies and foreign ones as well. Certainly not a bad bet as this market had a turnover of \$31.24 billion in 2001. What is curious is that amongst the players size was not necessarily the defining factor: the participation of the big five, Pão de Açúcar, Carrefour, Sonae, Bompreço e Sendas actually fell from 41% to 39%.

This signals a trend in the market in favor of the smaller chains that act on a regional basis, the differential being their agility, (a factor that is virtually impossible for the large organizations), their offer of specialized services and the adoption of information technology as a work tool. What also needs to be considered is an increase in agility on the part of the suppliers - the market is more competitive thanks to the stability of the currency - and this resulted in a vicious but fortuitous circle. According to the trade publication Supermercado Moderno, smaller companies with revenues less than R\$100 million grew 12% in 2001 and those with revenues less than R\$35 million grew even more - 14%. The revenues of the big five grew 4%. It is not a perfect-world situation due to the loss of purchasing power on the part of the consumer. This can be seen from the sales statistics by square meter, a drop of 20% between 1997 and 2001, and per employee, a drop of 6%.

Today, supermarkets can be found throughout the country and the number of establishments totals 69,396 according to the Nielsen census. Appearing on the scene less than fifty years ago, (the first one was Sirve-se that opened to the public on the 24th of August in the Rua da Consolação in the center of Sao Paulo) they mirror the



The impressive numbers of Brazilian supermarkets

	1994	1995	1996	1997	1998	1999	2000	2001*	Var. (%) 01/00
Stores	37.543	41.839	43.763	47.787	51.502	55.313	61.259	69.396	13,3
Revenue (R\$ billion nominal values)	34,9	40,6	46,8	50,4	55,5	60,1	67,6	72,5	7,2
Revenue (R\$ billion in 2000)	N.D.	N.D.	64	66,4	66,3	70,3	68,4	67,6	-1,23 real
Part. of revenue in GNP (%)	6	6,6	6,2	6	6,1	6	6,2	6,2	6,2**
Direct jobs	650.000	655.200	625.000	655.000	666.752	670.086	701.622	710.743	1,3
Sales area (millions of square meters)	N.D.	N.D.	N.D.	12	12,7	13,1	14,3	15,3	7
Check outs	N.D.	N.D.	N.D.	123.170	125.867	135.914	143.705	156.022	8,6

Fonte: Abras - N.D.: Não Disponível * A preços de 2001 - All the numbers were actualized to 31/12/2001 ** Cálculo da Gazeta Mercantil

profound changes that have taken place in the country over the last half-century. The catalyst was the intensification of industry in the Sao Paulo region fueled by the automobile manufacturers that were also partly responsible for the urbanization process that started in Sao Paulo but quickly spread to the rest of the country.

Compare the products on sale in the early days with those today. In 1960 only 10% of the Brazilian diet comprised industrialized food. In the following decade this number doubled to 20% and currently it is around 60%. These numbers bear testimony to women taking up jobs that previously were held by men (between the sixties and seventies), the growth of a competent food industry - that would have grown slower if it did

not possess an efficient distribution system - and the desire, on the part of the consumer, to have an easier way to make purchases.

This sector, in Brazil, structured itself extremely well and can be considered as one of the most modern in the world. Sales points were designed for all tastes and needs and go from selected products that sell an average of 700 items to hypermarkets where it is possible to find over 45,000 items ranging from fish to electronic devices. Another way of looking at this is the fact that no less than 13% of all the commercial employees in Brazil are found in the self-service sector.

The two largest chains, Pão de Açúcar e Carrefour, between them, employ 102 thousand



The department stores and self-service prosper and can be compared to the world's most modern.

Shopping Malls

D. DEFANTI

	Shoppings	ABL*	Stores	Jobs
Southeast	149	3,589,778	24,258	275,777
South	41	778,004	5,203	59,430
Northeast	34	771,114	5,214	59,317
Midwest	19	420,742	2,929	32,365
North	3	86,563	459	6,658
Total	246	5,646,201	38,063	434,322

Source: Brazilian Association of Shopping Malls *

people, which is more than twice the amount of people employed by Volkswagen, Fiat and General Motors together.

Even with revenues estimated at one third of those of the supermarkets - something like \$10.9 billion - the shopping arcades and malls continue to be the jewels in the crown of the retail business. Their consolidation in Brazil took some time. Brazilians got to know the first of them in 1966 with the inauguration of the Iguatemi Shopping Center in Sao Paulo. This mall reigned alone for five years until the opening of the Conjunto Nacional in Brasilia in 1971. Twenty years after Iguatemi appeared on the scene there were 34 malls. In 1990 the sector took off and there are now 246 establishments, of which 224 are operational and 22 under construction.

Proof that this evolution is recent can be found in a study that the sector's association asked the Nielsen Institute to carry out. It was found that the average lifetime of Brazilian shopping malls is 12.5 years. This is a surprising fact. The malls encompass a built-up area of over 12.8 million square meters where there are 5.6 million square meters available for rent, approximately 38,000 stores, and parking space for 393 thousand vehicles. This whole infrastructure provides jobs for 432 thousand people who serve 7.9 million customers per month.

Both the industrial sector that was anxious to produce exactly what the consumer could wish for and the commercial sector that was agile, spread out, and sophisticated in terms of distributing goods to wherever they were needed reappraised the profile of the Brazilian consumer after 1994. They discovered quite a lot that previously had been in the shadows. Low-income consumers, for example. This segment that had been ignored by

the market as a whole has received increasing attention from the marketing departments of a number of companies. The discovery of these consumers that have their own buying habits was one of the most positive results of the Plano Real. Curiously it was not in the spheres that one would expect, such as supermarket shelves, that the purchasing power of this segment first made itself felt, (although the boom in the sale of chicken was one of the indicators at this time). It was in the building material stores. It was found that almost a half of the retail sales of cement (between 40% and 45%) were (and still are) directly linked to the "formigas", or ants. This signifies a volume of 15 to 17 million tons a year.

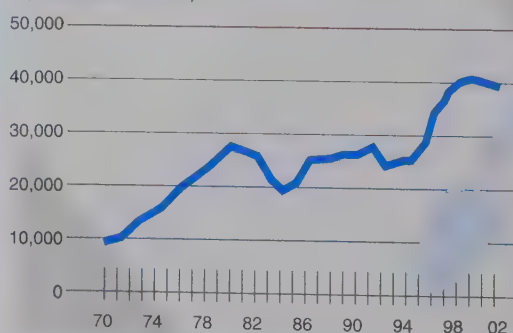
The nickname "ants" refers to the proverbial capacity of an insect that works, saves, and builds and applies to people who save a small part of their monthly salary to buy bricks and cement to build their own house. It is a sort of safety net that is opened when there are enough bricks and cement for the house to be built, usually with the help of people from the local community. During the three year period 1997/1999, when the salary of the workers showed the best results for the previous ten years the cement industry also revealed its best results.

When this "ant" was discovered serious studies commenced regarding this small consumer who was, until then, considered to be more of a subject for academic theorizing than a citizen that could find his way into the universe of consumers. It became possible to draw up a profile that would even indicate when he would go out to buy something without the necessary money in his

Production of cement

(In thousands of tons)

D. DEFANTI



Source: SNIC and Gazeta Mercantil Information Center

Credit Card Use

D. DEBANT

	Cards (in millions)	Variation (in %)	Transactions (in millions)	Variation (in %)	Values (in \$ billion)	Variation (in %)
1991	7.9		105.7		5.2	
1992	7.8	-1.3	151.6	43.4	5.1	-1.9
1993	8.4	7.7	199.9	31.9	6.3	23.5
1994	11.2	33.3	210.3	5.2	10.3	63.5
1995	14.3	27.7	319.0	51.7	21.3	106.8
1996	17.2	20.3	437.1	37.0	25.5	19.7
1997	19.3	12.2	516.7	18.2	27.8	9.0
1998	22.0	14.0	641.2	24.1	32.0	15.1
1999	23.6	7.3	800.0	24.5	41.6	25.3
2000	28.0	18.4	1,000.0	29.9	50.4	21.1
2001	35.3	26.3	1,000.0	3.0	62.9	24.9



Source: Brazilian Association of Credit Cards and Services

pocket. Bad debt, for example, is extremely low amongst people in this income bracket. It is not surprising, therefore, that the influential American newspaper The Wall Street Journal expressed amazement in an article published on the front page that cited the results of Casas Bahia, a Sao Paulo chain of stores that is one of the leaders in the home electronics sector. Of the chain's annual revenue of \$1.5 billion, 90% are sales paid in installments. And these sales are usually made in stores that are located in the poorer parts of town and to people whose average monthly income borders on \$190.

On the other hand when the low-income customer falls behind in his payments he makes an arduous attempt at quitting them at the first opportunity. A fact; soon after the monetary correction of the FGTS (Pension Fund) started to be restored in relation to the monies held at source during the "Summer" and "Collor I" financial interventions the Sao Paulo Commercial Association discovered that this compensation, in the lower income brackets, was used to pay off debts. This was seen as a way of cleaning things up in order to make new purchases on credit for Christmas 2002.

With estimates that vary from R\$350 billion to R\$400 billion the consumption of people in the lower income bracket can no longer be considered as unimportant. It is even catching the attention of the financial market that supposedly is more concerned with the 63 million Brazilians that have a bank account and especially the 2.7% of the population that earn more than 20

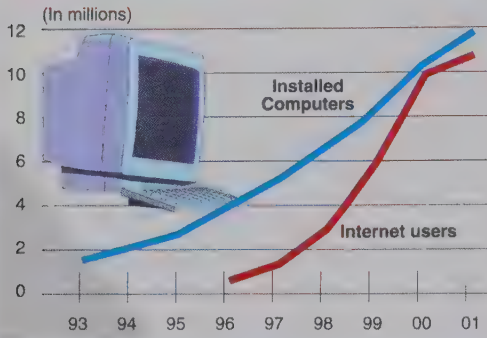
minimum salaries. Not forgetting the fact that there are 45 million people in this country without a bank account. These people do not have access to the system due to their low levels of income or even when it is not so low it comes from non-registered employment, or problems with credit, or check books.

What is at stake here is the Banco Postal (the Mail Bank) that cost R\$200 million cash, an amount established by the Mail Service for the tender of the right to offer basic banking services such as current accounts, saving accounts, payments and receivables etc, installed in Post Offices. This represents the end of the exclusion of 1750 municipalities of the 5561 existing in Brazil from the banking system. Based on calculations made by the Mail Department, Brazil will have 15 million new current account holders and 17 million new savings account holders within the next 15 years by using the services of the Postal bank and representing a turnover between R\$8 billion and R\$10 billion. Over the short term, by the year 2003, Bradesco hopes to gain 3.5 million new accounts, which will represent 27% of its present client portfolio.

In those municipalities where banking services are considered to be run of the mill it is already possible to find credit cards in the pockets or wallets of people who make between 1 and 5 minimum salaries. In this income bracket we can find a movement of some R\$7 billion. This is still a grain of sand in the overall universe of R\$145 billion in transactions that were carried out in 2001 according to data from the Brazilian

Computer population and use of the Internet

D. DEFANTI



Source: Fenasoftware and IDC

Association for Credit Cards and Services. The average yearly spending is very low, (R\$480, whilst at the top of the list this amount is around R\$15 thousand), but as soon as operations with the low income sector take on greater proportions this number can easily reach R\$15 billion per year according to several banks

Another fact that is being taken into account, no matter what the consumer's earnings are, is the way of approaching him/her. The Internet promised much more than it accomplished in terms of sales. According to

the IBGE Commercial Study for 2000 retail sales through this media represented only 0.1% of the overall revenues of the sector. It should not be disregarded, however, as there are a number of facts that prove to the contrary. For example, in the Magazine Luiza, a chain with 115 stores and headquarters in the town of Franca, in the interior of the State of São Paulo, 10% of revenues - total sales for 2002 are estimated at R\$650 million - come from Internet sales. The company has been using computers since 1992 when it opened virtual shopping in a number of small towns. There are no products in stock or to be found on display, just a sample list that the consumer can choose from and the purchase will be delivered within 24 hours. It is a notable exception. Not just because of the year that the system was installed, long before the e-business fever, but also for its participation in the overall revenue.

It is clear that that the Internet is not the only new tool that can be used by the retail sector to capture consumers. Direct sales, for example, are providing positive results. With \$2.5 billion of sales in 2001 Brazil ranked fourth in the world after the United States, with \$25 billion, Japan



Packaged foodstuffs are hygienic and follow the international health standards.

Consumption of chicken meat

In tons

D. DEFANTI

	Local market	Variation (%)	Exports	Variation (%)	Total	Variation (%)
1989	1,811,396		243,891		2,055,287	
1990	1,968,069	8.65	299,289	22.71	2,267,358	10.32
1991	2,200,211	11.80	321,700	7.49	2,521,911	11.23
1992	2,350,567	6.83	376,425	17.01	2,726,992	8.13
1993	2,709,500	15.27	433,498	15.16	3,142,998	15.26
1994	2,929,997	8.14	481,029	10.96	3,411,026	8.53
1995	3,616,705	23.44	433,744	-9.83	4,050,449	18.75
1996	3,482,767	-3.70	568,794	31.14	4,051,561	0.03
1997	3,811,569	9.44	649,356	14.16	4,460,925	10.10
1998	3,885,709	1.94	612,477	-5.68	4,498,186	0.83
1999	4,755,492	11.60	770,552	25.80	5,526,044	13.40
2000	5,069,777	6.61	906,746	17.67	5,976,523	8.15

Source: Brazilian Association of Producers and Exporters of Poultry (Abef)

with \$22 billion and France and Korea that were even with \$2.9 billion each.

A third strategic point for someone intending to attract more consumers is to look beyond the geographical nuclei traditionally considered as being wealthy. Industrial conglomerations, once thought of as a sign of wealth, weigh less, today, than centers of services - the inimitable city of São Paulo is the one that is losing the most ground in this respect. Although it is a slow process it can be seen that the purchasing power of the richest States in the nation such as São Paulo, Rio de Janeiro and Minas Gerais is starting to migrate. These States still detain more than a half of the country's potential purchasing power but were already losing points in 2000 when they came in at 53.7%. If we add the first three States together with the fourth and fifth that are Rio Grande do Sul and Parana respectively we come to a sum total of 68.1% (in 2000) and 66.7% (in 2001). Finally, the frontrunners - the ten largest - make up 84.1% and 82.8% respectively

Over the four years from 1998 to 2001 the amount of money spent on durable and non-durable goods, plus home investment, increased 26%, which was almost the same as the inflation recorded for the same period. Region by region we can perceive some subtle changes. In the Southeast, for example, where consumer growth was lower than the national

average. The Northeast and Southern regions swapped positions in the ranking. The Northeast made up of the States of Alagoas, Bahia, Ceara, Maranhão, Paraíba, Pernambuco, Piauí, Rio Grande do Norte e Sergipe used to represent the second largest buying power in Brazil in 1998. By 2001, this position had been forfeited to Parana, Rio Grande do Sul e Santa Catarina. Together these three States recorded the largest increase in the volume of consumer money during the years 1998/2001: 44%, far above the national average of 26%.

At first sight the Midwest could appear to bear a supporting role but this is where the heavy betting will take place over the next few years. Although they only contribute with 7.5% of the consumer potential the States of Goiás, Mato Grosso, Mato Grosso do Sul and the Federal District strengthened their regional market and showed positive growth in reais. These States represent 18.86% of the nation's territory and are home to 10% of its population, contain one third of its livestock and another third of the grain production. The results of investments in agriculture related businesses are making themselves felt.

The exploitation of primary activities with land has started to diminish and the Census 2000 demonstrated this: with 86.7% of urbanization the Midwest only lost out to the Southeast in this

Consumer potential index (IPC) – Brazil – 2001

	Population 2001	IPC (%) 2000	IPC (%) 2001	Variation (%)	Value (R\$ billion)
São Paulo	37,630,106	31.594	31.29	-1	228.4
Rio de Janeiro	14,553,747	11.59	11.573	-0.1	84.5
Minas Gerais	18,087,528	9.319	9.255	-0.7	67.3
Rio Grande do Sul	10,325,405	8.131	8.297	2	64.1
Paraná	9,769,639	6.276	6.307	0.5	49.2
Bahia	13,626,159	4.311	4.298	-0.3	33.5
Santa Catarina	5,460,195	3.511	3.479	-0.9	27.1
Pernambuco	7,992,683	2.931	3.029	3	22.1
Goiás	5,115,273	2.821	2.866	1.6	20.9
Distrito Federal	2,102,624	2.421	2.433	0.5	17.7
Ceará	7,483,158	2.353	2.363	0.4	17.2
Espírito Santo	3,136,244	1.835	1.869	2	14.6
Paraíba	3,464,621	1.788	1.84	3	14.3
Maranhão	5,730,467	1.63	1.693	4	12.3
Pará	6,274,992	1.444	1.464	1	10.6
Mato Grosso	2,572,011	1.291	1.233	-4	9
Rio Grande do Norte	2,815,361	1.104	1.12	1	8.7
Mato Grosso do Sul	2,115,812	1.007	0.966	-4	7
Alagoas	2,867,832	0.846	0.824	-2.6	6.4
Piauí	2,868,805	0.812	0.831	2	6
Amazonas	2,975,107	0.728	0.695	-5	5.4
Sergipe	1,817,301	0.703	0.723	2.8	5.2
Rondônia	1,423,717	0.59	0.604	2.4	4.7
Tocantins	1,188,303	0.391	0.394	0.7	3.1
Acre	578,227	0.252	0.261	4	2
Amapá	498,735	0.172	0.172	0	1.3
Roraima	348,245	0.144	0.152	6	1.2
Total value – Brasil					743.83

Source: Florenzado Marketing

respect. Presently it is the time and place for agro-industry. Apart from the large companies that are already installed there such as Sadia, Perdigao and Seara there is a continuous arrival of new investors, foreigners included, that intend to turn the region into a huge base for exports. In cities like Rio Verde (Goiás), Rondonópolis (Mato Grosso) and Dourados (Mato Grosso do Sul), that are amongst the towns leading the ranking in terms of grain production in the Midwest, industry is already the largest source of revenue. A study carried out by IPEA (the Institute for Applied Agricultural Research) shows that between 1970 and 1998 the participation of the agricultural revenue in the GNP of the municipalities was halved whereas the industrial participation was tripled in some locations.

At the other end of the scale the North (Acre, Amapá, Amazonas, Pará, Rondônia, Roraima and Tocantins) did not rank well because there was an overall loss, primarily because of a lack of purchasing power, on the part of the two largest states, Para and Amazonas

As things stand, Brazil is ready and waiting for

the fourth wave of consumerism. There is a lot of space available to sell all manner of goods. From toothbrushes - our per capita use is 0.8/year when it should be four - to mineral water where consumption has increased from three liters in 1977 to 25 liters today. Vanity products cannot be ignored - the cosmetics market practically doubled between 1996 and 2000. But there is still a long road ahead.

In 1990 when Ipea drew up its "map of hunger zones" it came to the conclusion there were 37 million Brazilians living below the poverty line and the blame was focused on the lack of, or poor, distribution of wealth. Correct, but at the same time another reality came to the surface that was almost as important as the first one: even if all of the population earned a decent wage there wouldn't be enough food to go around. At the moment the situation is different in regards to the second hypothesis; unfortunately it's just as bad as the first. Abject poverty can still be measured at something like 50 million people living on or below the hunger line. The only difference is that today we are more aware of this fact because, since the

nineties, a number of organizations have sprung up with more than 20 million volunteers willing to help out in this respect.

After the Plano Real it was estimated there were eight million families, the same population as the whole of Argentina, that had become participants in the marketplace as consumers. A fairly large number of them have already departed. The prices of basic necessities, according to calculations by the pharmaceutical industry, have risen far more than the IGP-M (inflation rate) of the Getulio Vargas Foundation. A container of kitchen gas, one of the chosen villains attacked by the candidates for the presidency in 2002, is the champion. It increased 546.1% in price whilst the IGP showed an increase of 134% over the same period. The National Study of Homes draws an accurate profile of earnings: in 2001 the average earnings of a worker dropped for the fifth consecutive year, and accumulated a net loss over this period of 10.3%. The 10% that earn the least lost 3.17% from 1999 to 2001 whilst the 1% that earns the most gained 5.19%.

Apart from the problem of salaries not even accompanying inflation, jobs are more and more scarce. There are 18.2 million Brazilians working

Alignment of prices since the plano real

(July 1994 to December 2001)

Containers of kitchen gas	546.1
Public transport	230.3
Health Insurance	213.0
Gasoline	211.1
Doctors	196.6
Electrical Energy	199.5
Vehicle Insurance	194.1
Water and Sewage	150.2
Rates on property	149.4
Dentists	144.5
IGP-M-FGV factor	134.4
Car license	132.2
US dollar	132.0
Medical test laboratories	122.7
IPC-FIPE	100.5
Medicine	86.6



Source: The Brazilian Federation of Pharmaceutical Industries

Services and equipment for residential use

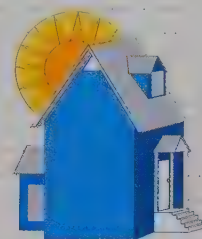
D. DEFANTI

Basic Services

Electrical Energy	96.0
Garbage Collection	83.2
Mains Water	81.1
Sewage	66.8

Equipments

Oven	97.6
Television	89.0
Radio	87.8
Refrigerator	85.1
Telephone	58.9
V.C.R.	35.3*
Washing machine	33.7
Automobile	32.7*
Microwave	19.4*
Freezer	18.8
P.C.	12.6
Internet Access	8.6
Air Conditioning	7.5*



Source: IBGE PNAD 2001 and Gazeta Mercantil Information Center

informally. This represents 40% of people with employment, the remaining 23.7 million being signed up employees. The salary mass recorded in six Metropolitan regions is lower than that of December 1994 and an extra 1.75 million workers have joined the pay rolls over these same years.

To pour a little more cold water on consumption we should not forget the Internal Revenue Service that absconds the money that the man in the street could be spending on goods or services. According to a survey carried out by the consulting firm Price Waterhouse Coopers, just between 1998 and 2001 taxes levied on the middle class increased by 10%. In other words taxes rose from 27% to 30%.

Because of all of these factors the road towards a new set of values in terms of consumption is not only a long one it is also in extremely bad shape and in need of some sort of re-democratization as took place with the Plano Real. Fixing the road is not an impossible task - precisely because it is common knowledge where the largest obstacles lie and where the danger of accidents is greatest. It is just a question of opting for the necessary repairs and starting to work on them. This is one of the most important tasks to be addressed over the next four years.

Phrases about
Brazil

PERO VAZ DE CAMINHA

From the letter from discovery sent to the king, Dom Manoel..

"...The land itself has very good airs, sometimes cold, sometimes mild, like those between the regions of Doiro and Minho, as now we found them the same way as those from Portugal. The waters are innumerable; infinite. And it is so gracious ((the land) that, in willing to use it, everything will grow, because of the waters it possesses."

AMÉRICO VESPUCCI

From the letter sent by Lorenzo di Pier Francesco dei Medici, written just after his trip to Brazil, in 1501, and published in Lisbon in 1538.

"...and if in this world there is a terrestrial paradise, without any doubt it should not be far away from this place (the Brazilian coast)... The sky is indeterminately decorated with some stars not known to us."

JAMES WOLFENSPHN

President of the World Bank

"The times are difficult but I am not pessimistic about Brazil. Brazil has solid reserves, it is an essential part of the international community, has a good government and the next one will not hide behind the wall".

ALAN GREENSPAN

President of the Federal Reserve Board.

"The problem of Brazil is 100% political. It has nothing to do with economy".

GERHARD SCHRÖDER

German Chancellor, in an interview given during his visit to Brazil, in February of 2002.

"Brazil is a strategic partner for Germany and for Europe. There is almost no other country in South America that insists in a guidance oriented to Europe as decisively as Brazil".

ROBERT B. ZOELICK

Representative of the United States for Foreign Trade.

"Brazil is reaching a point where its own economical and political success confers to it another potential role, however the country is still trying to understand what that role is".

KENT WILSON

Kent Wilson, North-American scientist e investor

"The Brazilian economy is like a jaguar in a zoo. It has remarkable strength, but is locked in a cage."

FRANÇOIS MITTERAND

Ex-president of France

"The Brazilians were not born as debtors and will not always be debtors. They have no vocation for such."

MICHAEL BLOOMBERG

Billionaire, then candidate to Mayor of New York City, in an advise given to the Brazilian investors.

"(The small investors) should not even look at the ups and downs of the shares published by the newspapers, since they will never be able to make enough money in the stock market to be able to retire overnight. They are not clever enough - and me neither - to make money on the floor."

JEFFREY SACHS

A professor at the University of Harvard, in July of 2001.

"Brazil has everything at hand: stable institutions, an enviable industrial basis, low inflation. All it needs is to wake up to the foreign market".

EDWARD NICOLAE LUTTWAK

North-American political scientist and strategist, in November of 2001.

The foreign investments will drop due to the deceleration of world growth, however Brazil should maintain its position in the ranking of the most attractive economies amongst the developing nations."

DONNA HRINAK

American Ambassador in Brazil, in an interview to the magazine VEJA.

"...Brazil needs to project its image in the United States."

PASCAL LAMY

French commissary for trade for the European Union.

"We (Europeans) are not at the same latitude and same longitude as Brazil. Your country has huge natural advantages that we do not have..."

MIGUEL HORTA E COSTA

World President of Portugal Telecom, in an interview given to the Portuguese press in July of 2002.

"The bases of the Brazilian economy are solid and stable, otherwise they would not have survived the Argentine crises. The situation should improve after the presidential elections, when normality will return to the markets."

DAVID J. O'REILLY

World President of Chevron/Texaco, in an interview to the international news agencies (September of 2002)..

"The prospects for the future of the Brazilian market are excellent".

ROBERTO VEDOVATO

Italian executive, president of Fiat in Brazil, in December of 2001.

"At the moment, it is not easy to decide on new investments in Latin America. However, we are confident that Brazil will continue to grow in the next years and we want to participate in this growth".

HEINRICH VON PIERER

World President of Siemens, justifying the choice of Brazil to host the meeting of the company's high management (1998)..

"It is a clear sign that Brazil is a primordial area for the world strategy for the development of Siemens".

KURT HELLSTRÖM

World President of Ericsson, in an interview to Gazeta Mercantil.

"We built a new plant, purchased a company and if new opportunities arise we will see, because Brazil is a giant"

GABRIEL JARAMILLO

Spanish, president of the Santander group in Brazil

"...I see Brazil as a place full of opportunities for all those who want to give it a try. I see a great future. The best thing is that, even having been here only for a short while, these people have already given me the chance to be one more Brazilian. I think this is where magic lies in this huge nation: on the power of welcoming everyone who arrives here and their ability to treat us as their own children. Por supuesto, I am also Brazilian."

KOICHI KONDO

Japanese executive, currently the President of Honda in Brasil, in an interview to Gazeta Mercantil

"I like it very much here, I find it comfortable to live in a tropical country because people are accessible, easy going, and I do not face racial prejudice problems. I feel that we are respected.

EMILIO BOTÍN

World President of the Santander Bank

"Regardless of the election process our commitment to Brazil is firm and definitive".

HORST KÖHLER

General Director for the IMF

"... Brazil does not need to restructure its debt, as it has all the conditions to secure a cycle of sustainable growth as from 2003. This is the reason why we said that we would like to see the main candidates supporting at least the central points of the program that we established with the current government. There could even be different opinions, but I am strongly convinced that Brazil has the potential to break away from this difficult situation and grow without restructuring."

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Associação Brasileira de Normas Técnicas (ABNT)

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IBGE - Municipal Agricultural Production

IBGE - Natural Resources and Environment Information System

IDC

Indústrias Romi

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Index
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iconograph

Chapter 1 - CLAUDIO LACHINI

A Strategic Country

- Coffee Plantations, Edu Garcia, Agencia Estado, page 15
- Transport of grain in barges, Antonio Jose do Carmo, Agencia Estado, page 16
- Coffee Plantations, Gabriela Zauith, Agencia Estado, page 17
- Advertising poster, Reproduction, page 20
- Soybean Plantation, Lau Polinesio, Agencia Reflexo, page 22
- Corn cob, Antonio Vargas, Agencia Estado, page 25
- Bean plantation, Edu Garcia, Agencia Estado, page 25
- Sugar cane plantation, Paulo Liebert, Agencia Estado, page 26
- Orange groves, Amado Neto, Agencia Estado, page 30
- Coffee irrigation, Agnaldo Novais, page 34

Chapter 2 - ROBERTO BARALDI

Yes Sir, this is Made in Brazil

- Melted steel, Alaor Filho, Agencia Estado, page 37 e 43
- The Cedro e Cachoeira textile factory in Minas Gerais, Release, page 38
- Assembly line for aircraft at Embraer, Milton Michida, Agencia Estado, page 45
- Audi A3 in the Curitiba Factory, Release, page 49
- GM plant in the State of Rio Grande do Sul, Release, page 50
- Ford factory in Camacari, Carlos Casaes, Agencia Estado, page 51
- Dell computers factory in Rio Grande do Sul, Ricardo Moraes, page 52
- Itajaí Valley, Mario Barbetta, Agencia Estado, page 56

Chapter 3 - KLAUS KLEBER

The managed debts

- Cidade de Deus, Clodoir de Oliveira, Fundacao Bradesco, page 61
- Banco Central do Brasil, Jorge Cardoso, page 62
- BM&F, Marcos Issa, page 64
- ABN AMRO Bank, Mario Castello, page 66
- Avenida Paulista, Paulo Pinto, Agencia Estado, page 68
- Barao de Maua, Reproduction, page 69
- HSBC headquarters, Release, page 71

Chapter 4 - ARIVERSON FELTRIN

The logistics of hope

- The Carajas train, Paulo Amorim, Agencia Estado, page 75
The old railroad, Reproduction, Agencia Estado, page 76
The Carajas train, Paulo Amorim, Agencia Estado, page 79
Loading and Unloading of containers in the Port of Vitoria, Rodrigo Rossoni, page 80
The port at Pecem, Ed Ferreira, Agencia Estado, page 84
A highway strewn with holes, Antonio Jose do Carmo, Agencia Estado, page 85
Ecovias, Itamar Miranda, Agencia Estado, page 86
Fortaleza Airport, Lourival Sant'anna, Agencia Estado, page 90

Chapter 5 - JORGE LUIZ DE SOUZA

Visionaries, pioneers and entrepreneurs

- The Itaipu generation plant, Aurea Cunha, Agencia Estado, page 95 e 98
The Paulo Afonso electrical generation facility, Release Chesf, Agencia Estado, page 96
Oil drilling rig, Milton Michida, Agencia Estado, page 100
Uruguaiana thermoelectric plant, Silvio Avila, Agencia Estado, page 102
The nuclear plant in Angra dos Reis, Itamar Miranda, Agencia Estado, page 104
Delmiro Gouveia, Reproduction, página 107

Chapter 6 - DIRCEU PIO

Clear legislation, clean water

- Crystal clear water pouring from a tap in the city of Manaus, Release, pages 111 e 112
Rio Negro with a partial view of the city of Manaus, Release, page 113
The headwaters of the Sao Francisco river, Rodrigo Fiume, Agencia Estado, page 115
A panorama of the city of Limeira, Release page 117
Water treatment facility in Manaus, Release, page 118
Garbage tip I, Agliberto Lima, Agencia Estado, page 124
Garbage tip II, Agliberto Lima, Agencia Estado, page 127

Chapter 7 - MARISA GIBSON

Sunshine and Vineyards

- Grapes, Ricardo de Moraes, page 131
Mango, Emerson Araujo, Agencia Estado, page 133
Harvesting melon in Rio Grande do Norte, Sergio Castro, Agencia Estado, page 134

- Grape cultivation, Antonio Jose do Carmo, Agencia Estado, page 137
 Colored cotton, Reproduction, Agencia Estado, page 141
 Farming shrimps, Release, page 143
 São Francisco river, Rodrigo Fiume, Agencia Estado, page 149
 The beach at Costa do Sauipe, Ricardo Brasileiro, page 152
 Jericoacoara beach, Silvio Ribeiro, Agencia Estado, page 154

Chapter 8 - RAIMUNDO PINTO

A Country that straddles both hemispheres

- Amazon Forest, Celio Junior, Agencia Estado, pages 157 e 158
 Tumucumaque National Park, Kitt Nascimento, Agencia Estado, page 159
 Lumber, Dida Sampaio, Agencia Estado, page 160
 Theatre of Amazonas, Release, Agencia Estado, page 165
 Porto de Trombetas, Celso Junior, Agencia Estado, page 168

Chapter 9 - PEDRO LOBATO

The Brazilian multinationals

- Bridge over the river Tejo, Release, pages 173 e 174
 Sports, culture and leisure complex, Release, page 176
 Marcopolo manufacturing facility in South Africa, Release, page 180
 WEG plant for manufacturing motors, Release, page 184
 Ambev products, Release, page 186
 Fogo de Chao Barbecue Restaurant, Release, page 187

Chapter 10 - CLAUDIO LACHINI

A society molded from a wide variety of people

- Boi do festival de Parintins, Milton Michida, Agencia Estado, pages 189 e 196
 Native child, Rogerio Medeiros, page 190
 Augusto Ruschi, Rogerio Medeiros, page 191
 A negro child, Rogerio Medeiros, page 192
 Swiss lady working in the fields, Rogerio Medeiros, page 193
 Frevo, Monica Zarattini, Agencia Estado, page 194

- Forro, Paulo Liebert, Agencia Estado, page 195
- Italian-Lebanese girl, Cilmar Francescheto, page 198
- Pomeranian children, Rogério Medeiros, page 200

Chapter 11 - LUIS RECENA

Health leaves the intensive care unit

- A symbol of the campaign against Aids, Valeria Goncalves, Agencia Estado, pages 207 e 212
- Infant vaccination, Dida Sampaio, Agencia Estado, page 208
- Vaccination against influenza for the elderly, Sergio Castro, Agencia Estado, page 210
- Nucleus of generic medicine in Anapolis, Goiania, Joedson Alves, Agencia Estado, page 216
- Generics, Epitacio Pessoa, Agencia Estado, page 217
- The State laboratory of Pernambuco, Release, page 218
- Adib Jatene, Beto Barata, Agencia Estado, page 219
- Incor, Mabel Feres, Agencia Estado, page 220
- Aedes aegypti, Sebastiao Moreira, Agencia Estado, page 223

Chapter 12 - JOSE ANTONIO SEVERO

A great social melting pot

- Children in the classroom, Caio Guatelli, Agencia Estado, page 225
- Henrique Dias, Reproduction page 226
- Felipe Camarão, Reproduction, page 227
- Harvesters, Rodrigo Cubel, Agencia Estado, page 229
- Children in uniforms, Clodoir de Oliveira, Fundacao Bradesco, page 233

Chapter 13 - ANDREA WOLFFENBUTEL

The emergence of the Brazilian woman

- Female production line, Banco de Imagens / GZM, pages 239 e 248
- Anita Garibaldi, Reproduction, page 240
- Princesa Isabel, Reproduction, page 241
- Esther de Figueiredo Ferraz, Jose Cordeiro, Agencia Estado, page 243
- Maria Silvia Bastos Marques, Release, page 243

Rita Camata, Roberto Castro, Agencia Estado, page 245
 Luiza Helena Trajano Ignacio Rodrigues, Bia Parreiras, page 247
 Gisele Bundchen, Claudia Guimaraes, page 249

Chapter 14 - CARLOS TAQUARI

Technological progress

Children's letters, Reproduction, page 253
 The clock at the Central do Brasil railway station, Release, page 255
 Bank Boston Technology Center, Release, page 259
 IBM in the interior of the State of Sao Paulo, Release, page 261
 Viaduto do Cha, Robson Fernandjes, Agencia Estado, page 263
 Masp, Gilmar Dall`Stella, page 264
 Via Anchieta, Itamar Miranda, Agencia Estado, page 265

Chapter 15 - JAIME MATOS

The fourth generation of consumption

Romi Isetta, Oswaldo Palermo, Agencia Estado, pages 269 e 270
 An alcohol filling pump, Eduardo Nicolau, Agencia Estado, page 273
 Computers, Release, page 274
 Automobile outlet, Fabiano Cerchiari, page 275
 Home appliance store, Monalisa Lins, Agencia Estado, page 277
 Production line for poultry, Banco de Imagens / GZM, page 280

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Technical Specifications

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- b) Select "Run" on your "Start" menu.
- c) Enter d\Brasil.exe (if the CD-ROM unit is on "d" drive)
- d) Click on O.K.





Luiz Fernando's decision to publish this book, "The new Brazil", comes at a propitious time. It is based on his own experience bolstered by information and familiarity with the facts and contains a message which is nothing more than a reality: this is a young country on the verge of taking a decisive step towards a more just society, rich by nature and, above all, rich in the initiative of people who believe in their ability to promote change. If the portrait of Brazil was lacking an overall view then this book provides data for a better understanding of the characteristics of the country and its potential for global participation at the beginning of this new millennium.

The Brazilian multiracial democracy is another highlight in this book that should be assessed from the standpoint of a pluralist society in which the freedom to do business has its fundamentals based on several different schools of thought but at the same time has atavistic roots molded by the very origin of its native inhabitants later reinforced by the nature of the immigrants seeking refuge from oppression, be it political or economical. The predatory spirit of the era of the Discovery was left behind and was replaced by people who were prepared to work and contribute to the building of a new nation, generation after generation.

In Luiz Fernando's opinion Stephan Zweig's affirmation that Brazil is the country of the future is already old news. Brazil is ready, willing and able to fulfill its role in the international scenario. And whether this is true, or not, is up to the reader to judge.

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